

## Workshop Manual

Audi A6 2011 ➤

Audi A6 China 2012 ➤

Audi A7 Sportback 2011 ➤

**Running gear, front-wheel drive and four-wheel drive**

Edition 12.2018



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### Repair Group

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Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.





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## 00 – Technical data

### 1 General notes

(ARL006212; Edition 12.2018)

⇒ ["1.1 General notes on Tyre Pressure Loss Indicator \(TPLI+\)", page 1](#)

⇒ ["1.2 General notes on dynamic steering", page 2](#)

⇒ ["1.3 General notes on drive shaft", page 3](#)

#### 1.1 General notes on Tyre Pressure Loss Indicator (TPLI+)

Please observe the instructions in the ⇒ Owner's Manual .

The Tyre Pressure Loss Indicator uses information from the ABS speed sensors to compare the rolling circumference and the vibration characteristics of the individual wheels. Any changes on one or more wheels are indicated on the dash panel display. If only one tyre is affected, the tyre position is indicated.

The Tyre Pressure Loss Indicator is a software module in the ABS/ESP control unit designed to detect gradual losses of tyre pressure at one wheel. Using the signals from the ABS speed sensors, the TPLI+ compares the wheel speeds and thus the rolling circumference of the individual wheels. The corresponding display in the instrument cluster lights up if the rolling circumference of one of the wheels changes. The rolling circumference of the tyre may change under the following circumstances:

- ◆ If the tyre pressure is too low.
- ◆ If the tyre has structural damage.
- ◆ If the wheels or the inflation pressures have been changed and the new tyre pressures not saved.
- ◆ If the vehicle is loaded unevenly.
- ◆ If the wheels of one axle are subjected to a greater load (e.g. when pulling a trailer or when driving uphill and downhill).
- ◆ If snow chains are fitted.
- ◆ If the temporary spare wheel is fitted.
- ◆ If one wheel has been changed on each axle (this also includes changing round the wheels from front to rear or vice versa).
- ◆ If the left and right wheels run on different surfaces for a sustained period of time.

If the Tyre Pressure Loss Indicator lights up:

The Tyre Pressure Loss Indicator on the instrument cluster indicates if the tyre pressure is too low or if a system malfunction has occurred.

System fault in Tyre Pressure Loss Indicator (TPLI+):

If the warning lamp flashes for about 1 minute after switching on the ignition and then remains steadily lit, there is a system fault. "TPMS" also appears in the instrument cluster.

A system fault is stored in the event memory of the ABS/ESP control unit and indicated by the yellow warning lamp in the instrument cluster remaining continuously lit. The warning lamp cannot be turned off by pressing the button on the multimedia





system operating unit - E380- . Proceed as follows if a fault is stored in the event memory:

- Connect vehicle diagnostic tester and select Guided Fault Finding.
- Select the relevant program in Guided Functions.
- Follow the instructions on the screen.

Performing calibration (re-adaption of tyre pressure):

The tyre pressures must be stored in the MMI following any changes to the inflation pressures or after changing a tyre on the vehicle.

- Switch on ignition, press "CAR" function selector button, turn rotary pushbutton on multimedia system operating unit - E380- to select tyre pressure monitoring and press rotary pushbutton to save tyre pressure.

## 1.2 General notes on dynamic steering

In conventional steering systems there is a direct mechanical connection between the steering wheel and the steering rack. This dictates a fixed ratio between the steering wheel lock angle and the turn angle of the steered wheels. In this design, only one steering ratio can be implemented on a vehicle at a time. Selecting the appropriate ratio always represents a compromise in meeting the different - and sometimes conflicting - requirements.

The key requirements can only be fully met by a variable steering ratio. A ratio of this kind varies the actual turn angle of the wheels depending on the vehicle speed and steering angle. The dynamic steering system basically employs two variable steering ratios, with comfort and performance-oriented characteristics respectively.

The variable ratios are achieved by means of an additional electro-mechanical drive of the steering pinion, which is superimposed on the steering input from the driver. In an emergency - that is, if this drive fails - the steering operates just like a conventional steering system. The mechanical connection between the steering wheel and the front axle is not broken.

However, there are many other advantages to dynamic steering. In interaction with the ESP and its sensors, the system is also activated when critical driving states are impending. By targeted variation of the front wheel turn angle, the dynamic steering system assists the ESP at the limits of the vehicle's handling.

The "adjuster" on the steering column is permanently installed. The steering column must be renewed if the "adjuster" is defective.

The basic setting for the dynamic steering system must be performed correctly to ensure proper functioning.



### Note

*The steering angle sender - G85- must be calibrated using the steering wheel balance - VAS 6458- before the basic setting can be performed.*

The basic setting must be performed if:

- ◆ The active steering control unit - J792- has been renewed.
- ◆ The front axle toe setting has been changed.
- ◆ The rear axle toe setting has been changed.





- ◆ The running gear of the vehicle has been modified in any way  
– e.g. conversion from standard running gear to sports running gear.
- ◆ The steering angle sender - G85- has been calibrated.
- ◆ The steering column has been renewed.
- ◆ The steering wheel is not straight when driving in a straight line.



#### Note

*Before performing the basic setting on the dynamic steering system, check the event memory and rectify any faults. The basic setting for the dynamic steering system must always be performed using the wheel alignment equipment approved by VW/Audi.*

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### 1.3 General notes on drive shaft

Wheel bearings must not be subjected to load after loosening bolt securing drive shaft at wheel hub.

If the wheel bearings are subjected to the full weight of the vehicle they will be overloaded, resulting in reduced service life. Therefore please note the following:

- ◆ Procedure for slackening bolt securing drive shaft to wheel hub ➔ [page 124](#)

Do not attempt to move the vehicle without the drive shafts fitted; this would result in wheel bearing damage. If the vehicle does have to be moved, always note the following points:

- Fit an outer joint in place of the drive shaft.
- Tighten the outer joint to 200 Nm.

Do not let drive shaft hang down under its own weight when performing repair work, as otherwise excessive bending could damage inner CV joint.





## 2 Safety precautions

⇒ ["2.1 Safety precautions when working on vehicles with high-voltage system", page 4](#)

⇒ ["2.2 Safety precautions when working in the vicinity of high-voltage components", page 5](#)

⇒ ["2.3 Safety precautions when working on vehicles with start/stop system", page 5](#)

⇒ ["2.4 Safety precautions when working on subframe", page 5](#)

⇒ ["2.5 Safety precautions when using testers and measuring instruments during a road test", page 5](#)

### 2.1 Safety precautions when working on vehicles with high-voltage system

High voltage! Danger to life!

The voltage levels in the high-voltage system constitute a safety hazard. Danger of severe or fatal injuries from electric shock.

- Persons with life-sustaining or other electronic medical devices in or on their body must not perform any work on the high-voltage system. Such medical devices include internal analgesic pumps, implanted defibrillators, pacemakers, insulin pumps and hearing aids.
- The high-voltage system must be de-energised by a suitably qualified person.

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#### Risk of injury - engine may start unexpectedly

It is difficult to determine whether the drive system of an electric vehicle or hybrid vehicle is active. Moving parts can trap or draw in parts of the body and/or clothing (safety hazard).

- Switch off ignition.
- Place ignition key outside vehicle interior.

#### Risk of damage to high-voltage wiring

Incorrect handling may result in damage to the insulation of high-voltage wires or high-voltage connectors.

- Never use high-voltage wiring or high-voltage connectors as a support.
- Never prop tools against high-voltage wiring or high-voltage connectors.
- Never bend or kink high-voltage wiring.
- Pay attention to coding when connecting high-voltage connections.





## 2.2 Safety precautions when working in the vicinity of high-voltage components

High voltage! Danger to life!

The voltage levels in the high-voltage system constitute a safety hazard. Danger of severe or fatal injuries from electric shock if high-voltage components or high-voltage wiring are damaged.

- Carry out visual check of high-voltage components and high-voltage wiring.
- Never use cutting/forming tools or other sharp-edged implements.
- Never perform work using welding, brazing, thermal bonding or hot air.

## 2.3 Safety precautions when working on vehicles with start/stop system

Risk of injury - engine may start unexpectedly

The engine can start unexpectedly if the vehicle's start/stop system is activated. A message in the instrument cluster indicates whether the start/stop system is activated.

- To deactivate the start/stop system, switch off the ignition.

## 2.4 Safety precautions when working on subframe

Risk of damage to components

Lowering the vehicle onto its wheels can damage components if the assembly mountings, steering rack or subframe cross brace are not properly fitted.

- Never lower vehicle onto its wheels with suspension components unfastened or detached.
- Never support weight of vehicle on subframe or subframe cross brace with suspension components unfastened or detached.

## 2.5 Safety precautions when using testers and measuring instruments during a road test

Risk of injury if test equipment is not secured

If an accident occurs and the front passenger's airbag is triggered, test equipment which is not secured adequately may be catapulted through the vehicle with potentially serious consequences.

- Secure test equipment to the rear seat.

Or

- Have another person operate the test equipment from the rear seat.



### 3 Repair notes

- ⇒ ["3.1 Leaks at shock absorbers", page 6](#)
- ⇒ ["3.2 Checking shock absorbers when removed", page 7](#)
- ⇒ ["3.3 Checking shock absorbers on shock tester", page 7](#)
- ⇒ ["3.4 Maximum values "a" in mm", page 9](#)
- ⇒ ["3.5 Rules for cleanliness", page 10](#)
- ⇒ ["3.6 General notes", page 10](#)
- ⇒ ["3.7 General repair instructions", page 11](#)
- ⇒ ["3.8 Contact corrosion", page 11](#)
- ⇒ ["3.9 Steering rack", page 11](#)
- ⇒ ["3.10 Gaskets and seals", page 11](#)
- ⇒ ["3.11 Bolts and nuts", page 12](#)
- ⇒ ["3.12 Electrical components", page 12](#)
- ⇒ ["3.13 Repairing damaged threads in longitudinal member \(sub-frame to body\)", page 12](#)
- ⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#)
- ⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#)
- ⇒ ["3.16 Raising and lowering vehicle when air spring system has / has not been opened", page 18](#)

#### 3.1 Leaks at shock absorbers

Shock absorbers are often replaced because of externally visible leakage. Inspections on the test rig and in the vehicle have shown that in the majority of cases this renewal is not justified.

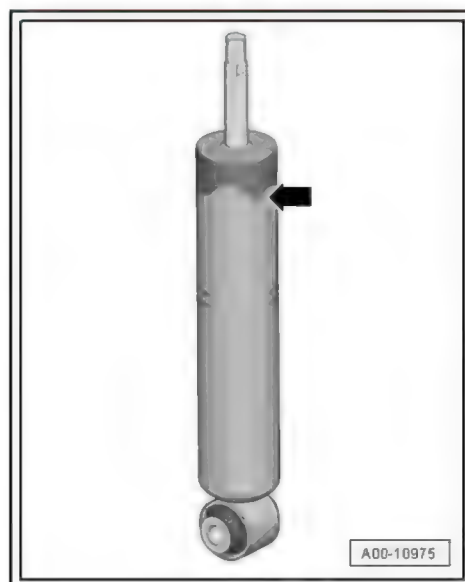
Slight loss of fluid ("sweating") at the piston rod seal is not a reason for renewing a shock absorber. A shock absorber with slight fluid leakage can be accepted as OK under the following conditions:



#### Note

*Slight fluid leakage is actually beneficial, as it lubricates the piston rod seal and thus extends the life of the shock absorber. This applies to shock absorbers on both the front and rear axles.*

- ◆ Fluid seepage (as shown in the shaded part of the illustration -arrow-) is visible, but the fluid is dull and possibly dried by dust.
- ◆ A thin film of fluid or dirt has formed on one side; no drips.

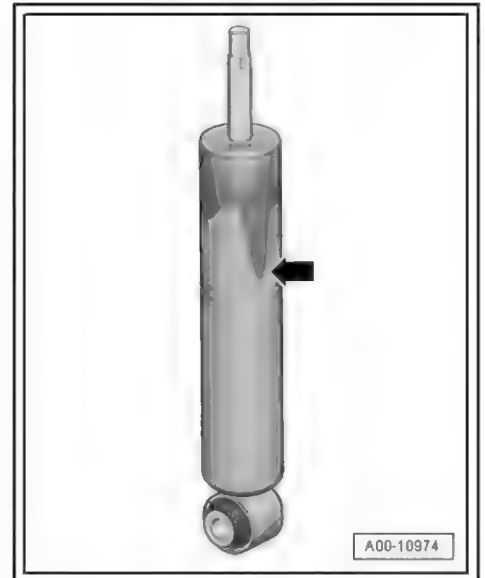






A shock absorber cannot be accepted as OK if the following occurs:

- ◆ Drips running down the side -arrow-; large area wet with fluid.
- ◆ If the shock absorber has a wet film of fluid running down the side of the tube, it is leaking and must be renewed.



### 3.2 Checking shock absorbers when removed

Defective shock absorbers can be identified by loud rumbling noises when driving, caused by wheel hopping, especially on bad roads. Heavy fluid leakage is an additional visual indication.



Note

*Shock absorbers are maintenance-free; shock absorber fluid cannot be topped up.*

After removal, a shock absorber can be checked by hand as follows:

- Compress shock absorber by hand.
- The piston rod should move smoothly over the entire stroke with uniform resistance and without jolts.
- Release piston rod.
- If the shock absorber has sufficient gas pressure the piston rod will return by itself to its original position.



Note

- ◆ *If this is not the case, the shock absorber does not necessarily need to be renewed. Provided there has been no major loss of fluid, it will still be as effective as a conventional shock absorber.*
- ◆ *Even without gas pressure, the shock absorber will provide full damping effect as long as there has been no major loss of fluid. However, it may produce more noise.*

### 3.3 Checking shock absorbers on shock tester

The shock tester allows shock absorbers to be tested without removing them from the vehicle. The damping effect can be assessed on the basis of the pointer deflection or the print-out.

Special tools and workshop equipment required





- ◆ Maha shock absorber tester - VAS 1990-
- ◆ Suspension strut test stand - VAS 6636-
- ◆ Suspension strut test stand - VAS 6640-

#### Test requirements

- Temperature: +10...+40 °C.
- Driver in vehicle
- Tyre pressure OK.
- Wheels of vehicle in a central and straight position on the tyre contact plates
- Front wheels in straight-ahead position
- Electromechanical parking brake released, foot brake not applied.

#### Test results

The condition of the shock absorbers can only be evaluated as follows:

- ◆ Satisfactory damping effect

Or

- ◆ Unsatisfactory damping effect



#### Note

- ◆ *It is not possible to obtain intermediate readings specifying the exact degree of impairment of damping effect.*
- ◆ *A forecast of the remaining service life is not permissible.*
- ◆ *Test results will be falsified if the suspension contacts the bump stops when the readings are taken.*

The following values apply only to tests conducted on the test equipment listed above. If the maximum values listed below are exceeded, the effectiveness of the shock absorber has deteriorated significantly and renewal is recommended.

Example:

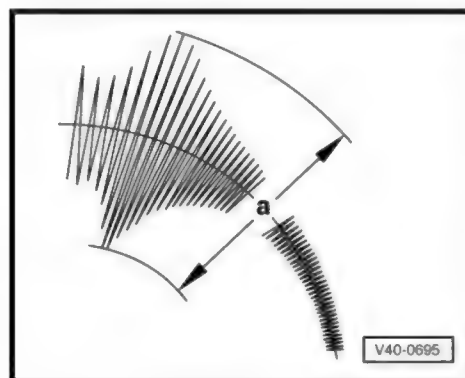
Maximum value = 70

- ◆ a = higher than 70: unsatisfactory damping effect
- ◆ a = lower than 70: satisfactory damping effect

The damper combinations fitted in the vehicle are indicated by the corresponding PR number on the vehicle data sticker.

Explanatory notes on weight codes used in production (PR nos.)

⇒ [page 345](#) .







### 3.4 Maximum values "a" in mm



#### Note

- ◆ If the reading is higher than the maximum value "a" listed in the table, the damping effect is unsatisfactory → renew the shock absorber.
- ◆ If the reading is lower than the maximum value "a" listed in the table, the damping effect is satisfactory → the shock absorber does not have to be renewed.

Vehicle type	Front axle	Rear axle	Remarks
Air suspension, standard running gear 1BK with 17" and 18" tyres <sup>1)</sup>	42	52	Unladen Tank full
Air suspension, standard running gear 1BK with 19" and 20" tyres <sup>1)</sup>	40	40	Unladen Tank full
Air suspension, sports running gear 2MB	t.b.a.	t.b.a.	Unladen Tank full
Standard running gear 1BA	46	46	Unladen Tank full
Sports running gear 1BE	40	40	Unladen Tank full
Heavy-duty running gear 1BB	t.b.a.	t.b.a.	Unladen Tank full
Standard running gear 1BH	t.b.a.	t.b.a.	Unladen Tank full
Heavy-duty running gear 1BR	t.b.a.	t.b.a.	Unladen Tank full
Air suspension, heavy-duty running gear 1BS	t.b.a.	t.b.a.	Unladen Tank full
Sports running gear 1BV	40	40	Unladen Tank full
allroad 1BY	t.b.a.	t.b.a.	Unladen Tank full
Air suspension, RS running gear 2MA	t.b.a.	t.b.a.	Unladen Tank full
Air suspension, sports running gear 2MB	t.b.a.	t.b.a.	Unladen Tank full
RS running gear 2MC	t.b.a.	t.b.a.	Unladen Tank full

- <sup>1)</sup> Vehicle at »normal« level setting; test must not be carried out in »dynamic« mode or with vehicle raised to »high« suspension level.

Test must be carried out with tyre inflation pressures for "part load".



### 3.5 Rules for cleanliness

- ◆ Thoroughly clean all joints and connections and the surrounding areas before disconnecting.
- ◆ Ensure proper seating of dowel sleeves for centralising suspension bracket and steering rack when installing.
- ◆ Place removed parts on a clean surface and cover them up to keep them clean. Use plastic sheeting or paper for this purpose. Only use lint-free cloths.
- ◆ Only install clean components; replacement parts should only be unpacked immediately prior to installation.
- ◆ Use only the grease and sealants with the part number stated.
- ◆ Carefully cover or seal open components if repairs cannot be carried out immediately.

### 3.6 General notes

#### CAUTION

Risk of damage to threads in body.

- ◆ DO NOT use an impact wrench when loosening or tightening bolts and nuts on any chassis components.
- ◆ Always start the first few threads of bolts and nuts by hand.
- ◆ All contact surfaces must be cleaned when installing wax-coated components. The contact surfaces must be free of wax and grease.
- ◆ Tightening torques refer to uncoiled bolts and nuts.
- ◆ Always renew self-locking bolts/nuts.
- ◆ Always renew bolts and nuts which are tightened by turning through a specified angle.
- ◆ Load-bearing components and other suspension parts must not be welded or straightened.
- ◆ Do not subject coil springs to hammer blows or weld splashes and do not make any new colour markings.
- ◆ Do not perform welding or cutting operations (using power grinders) near the coil springs or suspension struts. Cover up coil springs or suspension struts if necessary.
- ◆ Make sketches or take photographs when unfastening or removing and installing hydraulic and pneumatic lines or electrical wires. This ensures re-installation at the original location.
- ◆ Any cable ties, brackets or fasteners removed during repair work must be re-attached at their original standard locations.
- ◆ Before fitting the outer joint in the wheel hub, apply a thin coat of assembly paste to the splines on the outer joint → Electronic parts catalogue .
- ◆ When working on the vehicle, do not allow the drive shafts to hang down under their own weight and never let the joints bend to such an extent that they contact the end stop.
- ◆ Do not attempt to move the vehicle without the drive shafts fitted; this would result in wheel bearing damage. If moving the vehicle is unavoidable, note the following points:
  - ◆ Fit an outer joint in place of the drive shaft.
  - ◆ Tighten outer joint to 200 Nm.





- ◆ Bonded rubber bushes can only be turned to a limited extent. The suspension must therefore always be in the unladen position ➔ [page 15](#) when the suspension link attachments are tightened.
- ◆ If the wheel alignment has to be checked and adjusted at a later stage, all bolts and nuts which need to be slackened to make adjustments should initially only be tightened to the specified torque figure. After wheel alignment has been checked and adjusted, bolts and nuts must then be fully tightened by turning them through the specified angle.

#### CAUTION

All bolts and nuts must be fully tightened according to specifications before the vehicle is driven on public roads.

### 3.7 General repair instructions

To avoid repetition, a number of notes that are generally applicable to the individual procedures described in this manual are summarised here. They apply for this individual Workshop Manual.

- ◆ Before carrying out repair work on the electromechanical steering rack, identify the cause of the fault as exactly as possible using the ➔ Vehicle diagnostic tester in the operating modes "Guided Fault Finding", "Vehicle Self-Diagnosis" and "Test Instruments".

### 3.8 Contact corrosion

Contact corrosion can occur if unsuitable fasteners are used (e.g. bolts, nuts, washers, etc.).

For this reason, all the fasteners on the vehicle have a special surface coating (Dacromet). For correct version refer to ➔ Electronic parts catalogue .

In addition, rubber parts, plastic parts and adhesives are made of non-conductive material.

Always renew parts if you are in any doubt as to whether the old part can be used again.

Please note:

Only use genuine replacement parts; they have been tested and are compatible with aluminium.

Accessories must be approved by AUDI AG.

Damage caused by contact corrosion is not covered by the warranty.

### 3.9 Steering rack

To achieve the desired results when performing repairs on the steering rack it is important to work with the greatest possible care and cleanliness, and to use proper tools in good condition. Always observe the basic safety rules when performing servicing procedures.

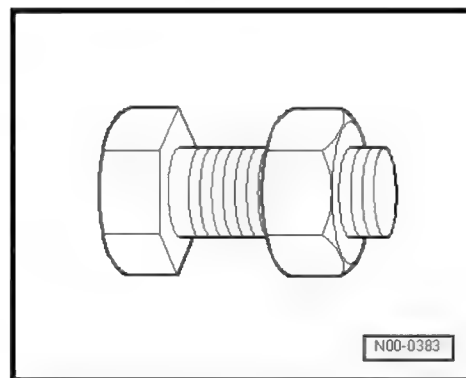
### 3.10 Gaskets and seals

- ◆ Always renew gaskets and seals.
- ◆ Check contact surface on housing or shafts for burrs and damage after removing the seals, and repair as required.
- ◆ Clean off all residues of liquid gasket thoroughly; make sure that no remaining material enters the steering rack housing.



### 3.11 Bolts and nuts

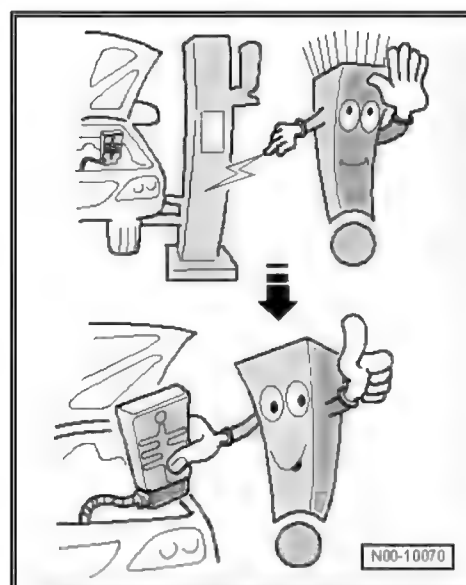
- ◆ Loosen and tighten bolts and nuts securing covers and housings in diagonal sequence.
- ◆ Take care not to tilt particularly sensitive components such as the servo motor with control unit; slacken off and tighten progressively in diagonal sequence.
- ◆ Tightening torques refer to uncoiled bolts and nuts.
- ◆ Always renew self-locking bolts/nuts.
- ◆ Always renew bolts and nuts which are tightened by turning through a specified angle.



### 3.12 Electrical components

You have certainly experienced light electric shocks when touching metal objects. This is due to the electrostatic charge accumulated by the human body. This charge can cause malfunctions if you touch the electric steering rack components.

- Before working on electrical components, touch an earthed object (e.g. water pipe or lifting platform). Do not touch the contact pins of the electrical connectors.



### 3.13 Repairing damaged threads in longitudinal member (subframe to body)

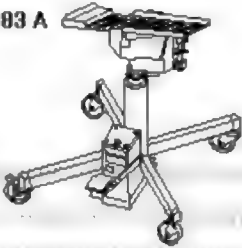
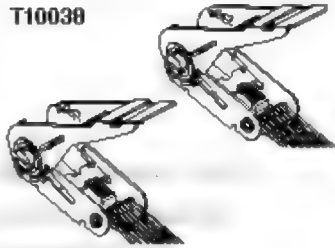

Instructions for repairing damaged threads ⇒ Body Repairs; Rep. gr. 50 ; Repairing threads for attachment of subframe

### 3.14 Lifting suspension to unladen position - vehicles with coil springs





# Special tools and workshop equipment required

<p>V.A.G 1383 A</p> 	<p>T10038</p> 
<p>T10149</p> 	
	<p>W40-0126</p>

- ◆ Engine and gearbox jack - VAS 6931- or engine and gearbox jack - V.A.G 1383 A-
- ◆ Tensioning strap - T10038-
- ◆ Support - T10149-



## Note

*All bolts on running gear components with bonded rubber bushes must always be tightened with the suspension in the unladen position (vehicle unladen).*

Bonded rubber bushes can only be turned to a limited extent.

Therefore, before tightening the bolts, suspension components with bonded rubber bushes must be brought into a position corresponding to the normal position while driving (unladen position).

Otherwise, the bush would be subject to torsion loading and its service life would be shortened.

This position can be simulated on the lifting platform by raising the appropriate part of the suspension with the engine and gearbox jack and support - T10149- .





- Before commencing work, use measuring tape or similar to measure dimension -a- from wheel centre to lower edge of wheel housing.

This measurement must be taken with the suspension in the unladen position (vehicle unladen).

- Make a note of the measured value. This will be needed when tightening the bolts and/or nuts.

Front axle:

Before raising wheel unit, secure vehicle to arms of lifting platform using tensioning straps - T10038- .

Rear axle:

Before raising wheel unit, secure vehicle to arms of lifting platform -arrow B- by attaching tensioning strap - T10038- to striker -arrow A-.

- Place a piece of rubber foam -1- or similar between side member and tensioning strap - T10038- and tighten tensioning strap - T10038- .



Note



Take care not to scratch side member.



#### CAUTION

If vehicle is not secured, there is a risk of it slipping off the lifting platform.

- Remove wheel ➔ [page 329](#) .
- Turn wheel hub until one of the wheel bolt holes is at the top.
- Attach support - T10149- to wheel hub using wheel bolt.

The bolts/nuts on the relevant suspension mountings must not be tightened until the distance -a- between the wheel centre and the lower edge of the wheel arch is the same as the distance measured before commencing work.

- Raise wheel bearing housing with engine and gearbox jack until distance -a- is obtained.

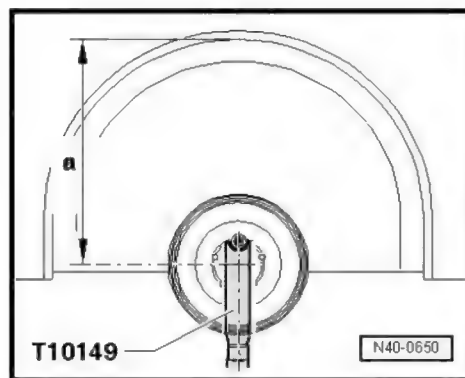
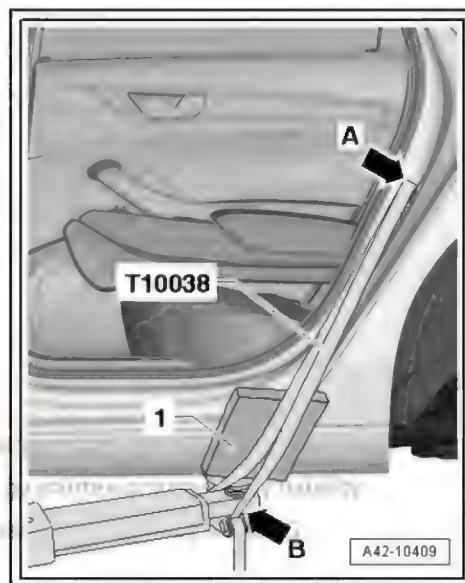
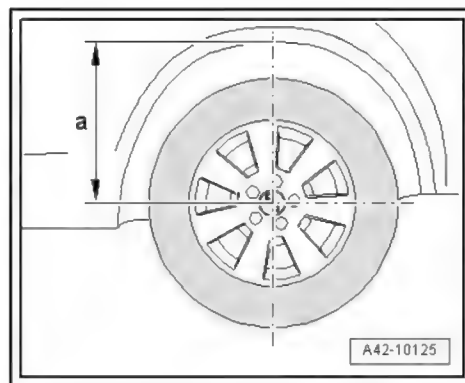


#### NOTICE

Do not raise or lower the vehicle while the engine and gearbox jack is under the vehicle.

Do not leave the engine and gearbox jack under the vehicle for longer than necessary.

- Tighten relevant nuts and bolts.
- Lower wheel bearing housing.
- Pull engine and gearbox jack out from below vehicle.
- Remove support - T10149- .







### 3.15 Lifting suspension to reference position (vehicles with air suspension)

Special tools and workshop equipment required

- ◆ Engine and gearbox jack - VAS 6931-



- ◆ Support - T10149-



- ◆ Vehicle diagnostic tester



#### Note

*All bolts on running gear components with bonded rubber bushes must always be tightened with the suspension in the reference position.*

Bonded rubber bushes can only be turned to a limited extent.

Therefore, before tightening the bolts, suspension components with bonded rubber bushes must be brought into a position corresponding to the normal position of the vehicle while driving (reference position).

Otherwise, the bushes will be strained, resulting in reduced service life.

This position can be simulated on the lifting platform by raising the appropriate part of the suspension with the engine and gearbox jack and support - T10149- .

Front axle:

- Engine must be installed



#### Rear axle:

Before raising wheel unit, secure vehicle to arms of lifting platform  
-arrow B- by attaching tensioning strap - T10038- to striker  
-arrow A-.

- Place a piece of rubber foam -1- or similar between side member and tensioning strap - T10038- and tighten tensioning strap - T10038- .



#### Note

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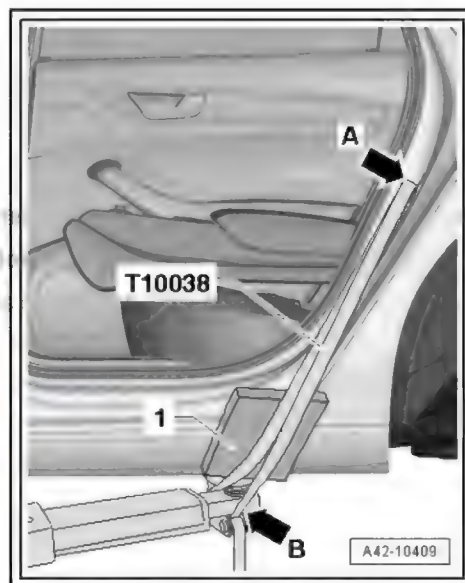
*Take care not to scratch side member.*



#### CAUTION

If vehicle is not secured, there is a risk of it slipping off the lifting platform.

- Position vehicle on lifting platform ➔ [page 18](#) .
- Bleed air spring system ➔ [page 284](#) .
- Remove wheel ➔ [page 329](#) .



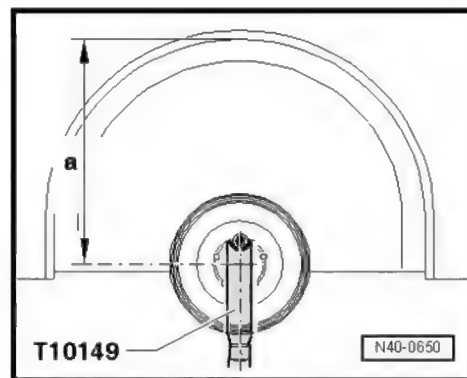


- Turn wheel hub until one of the wheel bolt holes is at the top.
- Use wheel bolt to attach support - T10149- .
- Insert support - T10149- in engine and gearbox jack and press wheel bearing housing upwards until reference position, dimension -a-, is attained.

Dimension -a- depends on the suspension height of the running gear installed on the vehicle:

Front axle, Sportback

Running gear <sup>1)</sup>	Dimension -a- in mm
Standard running gear (1BK)	386 mm ± 10 mm
Heavy-duty running gear (1BS)	391 mm ± 10 mm
RS running gear (2MA)	386 mm ± 10 mm
Sports running gear (2MB)	386 mm ± 10 mm



Front axle, saloon/Avant

Running gear <sup>1)</sup>	Dimension -a- in mm
Standard running gear (1BK)	384 mm ± 10 mm
Heavy-duty running gear (1BS)	389 mm ± 10 mm
RS running gear (2MA)	384 mm ± 10 mm
Sports running gear (2MB)	384 mm ± 10 mm
allroad (1BY)	393 mm ± 10 mm

Rear axle, Sportback

Running gear <sup>1)</sup>	Dimension -a-
Standard running gear (1BK)	384 ± 10 mm
Heavy-duty running gear (1BS)	389 ± 10 mm
RS running gear (2MA)	382 ± 10 mm
Sports running gear (2MB)	384 ± 10 mm

Rear axle, saloon/Avant

Running gear <sup>1)</sup>	Dimension -a-
Standard running gear (1BK)	382 ± 10 mm
Heavy-duty running gear (1BS)	387 ± 10 mm
RS running gear (2MA)	384 ± 10 mm
Sports running gear (2MB)	382 ± 10 mm
allroad (1BY)	390 ± 10 mm

<sup>1)</sup> A PR no. on the vehicle data sticker indicates which type of running gear is installed on the vehicle. To find out which PR Nos. are assigned to which types of running gear, refer to  
⇒ [page 345](#) .



- Raise wheel bearing housing with engine and gearbox jack until distance -a- is obtained.

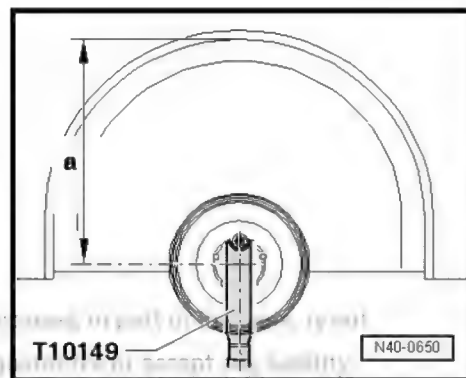
#### NOTICE

Do not raise or lower the vehicle while the engine and gearbox jack is under the vehicle.

Do not leave the engine and gearbox jack under the vehicle for longer than necessary.

#### Operations following setting of reference position

- Tighten relevant nuts and bolts.
- Lower wheel bearing housing.
- Pull engine and gearbox jack out from underneath vehicle.
- Detach support - T10149- .
- Fit and secure wheel ⇒ [page 329](#) .
- Charge air spring system ⇒ [page 284](#) .



#### CAUTION

All bolts and nuts must be fully tightened according to specifications before the vehicle is driven on public roads.

### 3.16 Raising and lowering vehicle when air spring system has / has not been opened

#### Raising vehicle when air spring system has not been opened

- If there is not sufficient clearance for lifting arms, use "Raise" function on MMI to set high suspension level, and activate "Wheel change" mode ⇒ Owner's Manual before raising vehicle with lifting platform.

This procedure ensures that the support arms of the lifting platform can be moved under the vehicle and that there are no uncontrolled changes of the air suspension system settings.

- Position support arms of lifting platform below specified lifting points on longitudinal members and raise vehicle.

#### Lowering vehicle when air spring system has not been opened

- Lower lifting platform and set vehicle down on its wheels.
- Swivel back support arms of lifting platform.
- Deactivate "Wheel change" mode and select desired drive mode ⇒ Owner's Manual .



#### Note

*"Wheel change" mode is also deactivated automatically at road speeds in excess of 10 km/h.*

#### Raising vehicle when air spring system has been opened

- If the vehicle has been raised and the air spring system has been opened, perform the steps listed under "Lowering vehicle when air spring system has been opened", in the sequence given, before lowering the vehicle back onto its wheels.





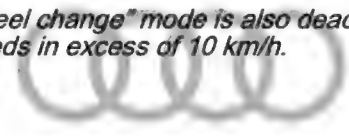
#### Lowering vehicle when air spring system has been opened

- Connect all air pipes to affected components.
- Check that rear air spring is correctly engaged on wheel bearing housing ⇒ [page 217](#) .
- Check that centring pin on rear air spring is correctly engaged in hole in body ⇒ [page 217](#) .
- Charge system ⇒ [page 284](#) .
- Lower vehicle onto its wheels.
- Deactivate “Wheel change” mode ⇒ Owner's Manual .



#### Note

*“Wheel change” mode is also deactivated automatically at road speeds in excess of 10 km/h.*



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## 4 Technical data

⇒ "4.1 Running gear", page 20

⇒ "4.2 Steering", page 23

### 4.1 Running gear

⇒ "4.1.1 Running gear (all vehicles)", page 20

⇒ "4.1.2 Running gear (Sportback)", page 20

⇒ "4.1.3 Running gear (saloon/Avant)", page 21

#### 4.1.1 Running gear (all vehicles)

Front axle	Five-link front suspension with top and bottom transverse links, anti-roll bar and twin-tube, gas-filled shock absorbers. Coil springs or optional air spring struts with variable level settings and damper characteristics
Rear axle	Independent, self-tracking suspension with upper and lower transverse links, transverse anti-roll bar, twin-tube, gas-filled shock absorbers with coil springs, or air springs with variable level settings and damping characteristics

#### 4.1.2 Running gear (Sportback)



Note

- ◆ These specifications are applicable for all engines.
- ◆ Different track width figures will apply if rims with different rim offset are installed.

	Front-wheel drive / four-wheel drive				
	Standard running gear 1BA <sup>1)</sup>	Heavy-duty running gear 1BB <sup>1)</sup>	Sports running gear 1BE <sup>1)</sup>	Air suspension, standard running gear 1BK in "comfort" level setting <sup>1)</sup>	Air suspension, heavy-duty running gear 1BS in "comfort" level setting <sup>1)</sup>
Wheel-base	2917	2916	2918	2915	2915
Track width (front)	1645	1644	1646	1645	1635
Track width (rear)	1639	1638	1639	1636	1644
Maximum steering angle at inside wheel	39°36'				

<sup>1)</sup> Front/rear track width only applicable to tyre size 235/55/R17 ET30 (ET= rim offset).





	Front-wheel drive / four-wheel drive				
	Sports running gear 1BV <sup>1)</sup>	Air suspension, sports running gear (RS models) 2MA <sup>2)</sup>	Air suspension, sports running gear 2MB in "sport" level setting <sup>3)</sup>	Sports running gear (RS models) 2MC <sup>1)</sup>	
Wheel-base	2918	2916	2916	2917	
Track width (front)	1646	1635	1641	1635	
Track width (rear)	1639	1626	1632	1628	
Maximum steering angle at inside wheel	39°36'				

<sup>1)</sup> Front/rear track width only applicable to tyre size 235/55/R17 ET30 (ET= rim offset).

<sup>2)</sup> Front/rear track width only applicable to tyre size 275/35/R20 ET35 (ET= rim offset).

<sup>3)</sup> Front/rear track width only applicable to tyre size 255/40/R19 ET32 (ET= rim offset).

#### 4.1.3 Running gear (saloon/Avant)



Note

- ◆ These specifications are applicable for all engines.
- ◆ Different track width figures will apply if rims with different rim offset are installed.

	Front-wheel drive / four-wheel drive				
	Standard running gear 1BA/1BH <sup>1)</sup>	Heavy-duty running gear China 1BB <sup>1)</sup>	Sports running gear 1BE <sup>1)</sup>	hybrid 1BE <sup>1)</sup>	Air suspension, standard running gear 1BK in "comfort" level setting <sup>1)</sup>
Wheel-base	2915	3016	2919	2918	2915
Track width (front)	1630	1630	1631	1631	1630
Track width (rear)	1623	1623	1624	1624	1622
Maximum steering angle at inside wheel	39°36'				





1) Front/rear track width only applicable to tyre size 235/55/  
R17 ET30 (ET= rim offset).

	Front-wheel drive / four-wheel drive				
	Heavy-duty running gear 1BR <sup>1)</sup>	Heavy-duty running gear China 1BR <sup>1)</sup>	Air suspension, heavy-duty running gear 1BS in "comfort" level setting <sup>2)</sup>	Sports running gear (S line) 1BV <sup>1)</sup>	allroad 1BY in "normal" level setting <sup>3)</sup>
Wheel-base	2914	3013	2915	2919	2914
Track width (front)	1628	1628	1630	1632	1643
Track width (rear)	1622	1621	1621	1624	1613
Maximum steering angle at inside wheel	39°36'				

1) Front/rear track width only applicable to tyre size 235/55/  
R17 ET30 (ET= rim offset).

2) Front/rear track width only applicable to tyre size 225/60/  
R16 ET37 (ET= rim offset).

3) Front/rear track width only applicable to tyre size 235/55/  
R18 ET41 (ET= rim offset).

	Front-wheel drive / four-wheel drive				
	Air suspension, sports running gear (RS models) 2MA <sup>1)</sup>	Air suspension, sports running gear 2MB in "sport" level setting <sup>2)</sup>	Sports running gear (RS models) 2MC <sup>3)</sup>		
Wheel-base	2915	2916	2917		
Track width (front)	1663	1615	1663		
Track width (rear)	1664	1606	1666		
Maximum steering angle at inside wheel	39°36'				

1) Front/rear track width only applicable to tyre size 275/35/  
R20 ET21 (ET= rim offset).

2) Front/rear track width only applicable to tyre size 255/40/  
R19 ET45 (ET= rim offset).

3) Front/rear track width only applicable to tyre size 275/35/  
R20 ET37 (ET= rim offset).





## 4.2 Steering

Steering rack	Electro-mechanically assisted, maintenance-free rack-and-pinion steering
Turning circle diameter	approx. 11.9 m





## 5 Disposal

⇒ "5.1 Releasing gas and draining front gas-filled shock absorbers", page 24

⇒ "5.2 Releasing gas and draining rear gas-filled shock absorbers", page 25

⇒ "5.3 Discharging front suspension strut (air suspension)", page 26

⇒ "5.4 Discharging accumulator", page 26

### 5.1 Releasing gas and draining front gas-filled shock absorbers

#### A - Releasing gas by drilling

- Clamp gas-filled shock absorber vertically in vice, with piston rod pointing downwards.

#### CAUTION

Safety goggles must be worn when drilling.

- Drill a 3 mm Ø hole -arrow A- through outer tube of shock absorber.



#### Note

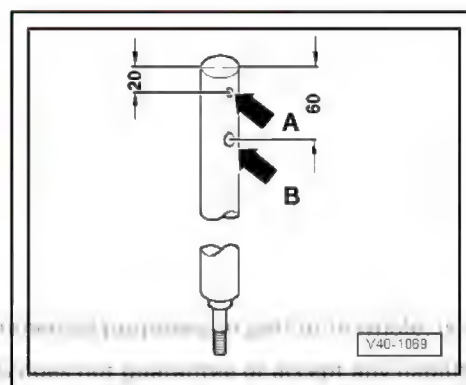
*Gas will escape during drilling.*

- Continue drilling until inner tube is fully penetrated (approx. 25 mm deep).
- Drill a second hole (6 mm Ø) -arrow B- through outer and inner tubes of shock absorber.
- Hold shock absorber over a drip tray and move piston rod up and down several times through entire stroke until no more fluid comes out.

#### B - Opening with pipe cutter

#### CAUTION

Safety goggles must be worn when drilling.







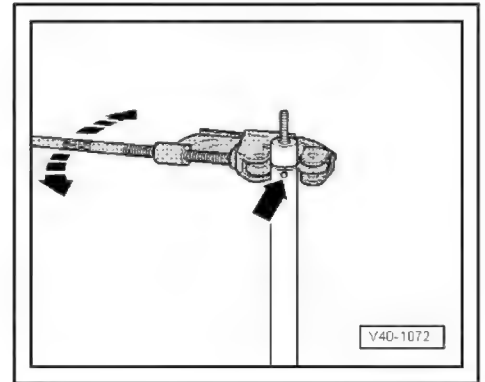
- Drill a 3 mm Ø hole -arrow- through outer tube of shock absorber, or saw through wall of tube.



Note

*Gas will escape when drilling or sawing.*

- Apply pipe cutter (e.g. Stahlwille Express 150/3) as shown in illustration and cut through outer tube of shock absorber.
- Pull the piston rod upwards, at the same time holding the inner tube securely with pliers and pressing it downwards, so that it remains in the outer tube when the piston rod is slowly pulled upwards.
- Pull piston rod off inner tube of shock absorber.
- Drain shock absorber tube.



## 5.2 Releasing gas and draining rear gas-filled shock absorbers

### A - Releasing gas by drilling

- Clamp gas-filled shock absorber vertically in vice, with piston rod pointing downwards.



**CAUTION**

Safety goggles must be worn when drilling.

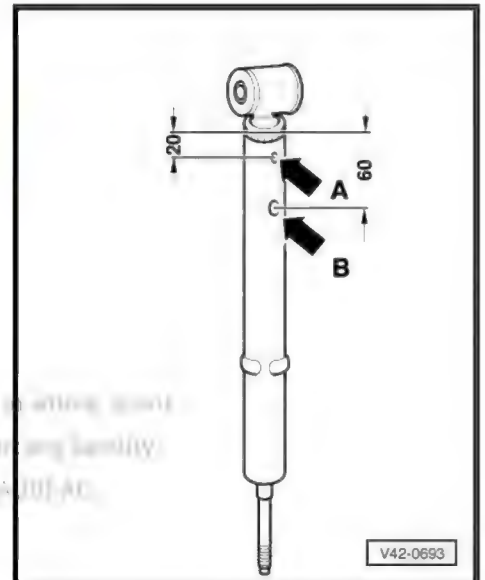
- Drill a 3 mm Ø hole -arrow A- through outer tube of shock absorber.



Note

*Gas will escape during drilling.*

- Continue drilling until inner tube is fully penetrated (approx. 25 mm deep).
- Drill a second hole (6 mm Ø) -arrow B- through outer and inner tubes of shock absorber.
- Hold shock absorber over a drip tray and move piston rod up and down several times through entire stroke until no more fluid comes out.



### B - Opening with pipe cutter



**CAUTION**

Safety goggles must be worn when drilling.

- Drill a 3 mm Ø hole -arrow- through outer tube of shock absorber, or saw through wall of tube.

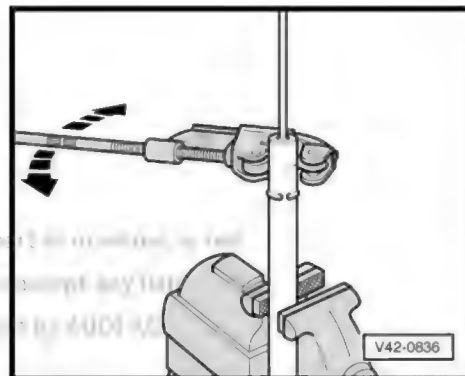


Note

*Gas will escape when drilling or sawing.*



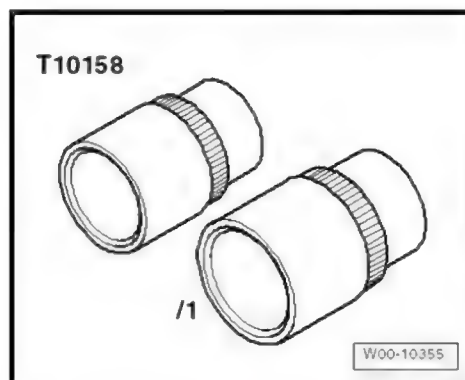
- Apply pipe cutter (e.g. Stahlwille Express 150/3) as shown in illustration and cut through outer tube of shock absorber.
- Pull the piston rod upwards, at the same time holding the inner tube securely with pliers and pressing it downwards, so that it remains in the outer tube when the piston rod is slowly pulled upwards.
- Pull piston rod off inner tube of shock absorber.
- Drain shock absorber tube.



### 5.3 Discharging front suspension strut (air suspension)

Special tools and workshop equipment required

- ◆ Socket - T10158/1-



Procedure

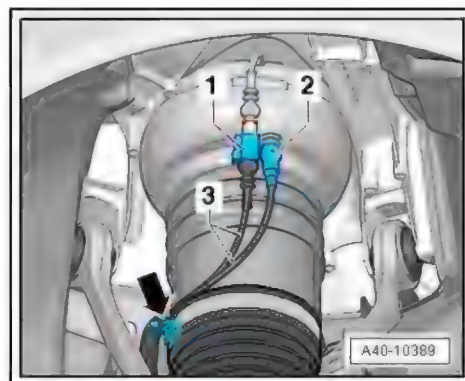
- Remove front air spring strut ⇒ [page 62](#) .
- Slowly loosen residual pressure valve -2- on front air spring strut to dissipate air pressure.



Note

*Illustration shows air spring strut installed.*

- Dispose of air spring strut.



### 5.4 Discharging accumulator

Special tools and workshop equipment required

- ◆ Vehicle diagnostic tester

Procedure

- Bleed air spring system ⇒ [page 284](#) .
- Remove accumulator ⇒ [page 309](#) .
- Dispose of accumulator.





## 40 – Front suspension

### 1 Front axle

⇒ "1.1 Overview - front axle", page 27

#### 1.1 Overview - front axle

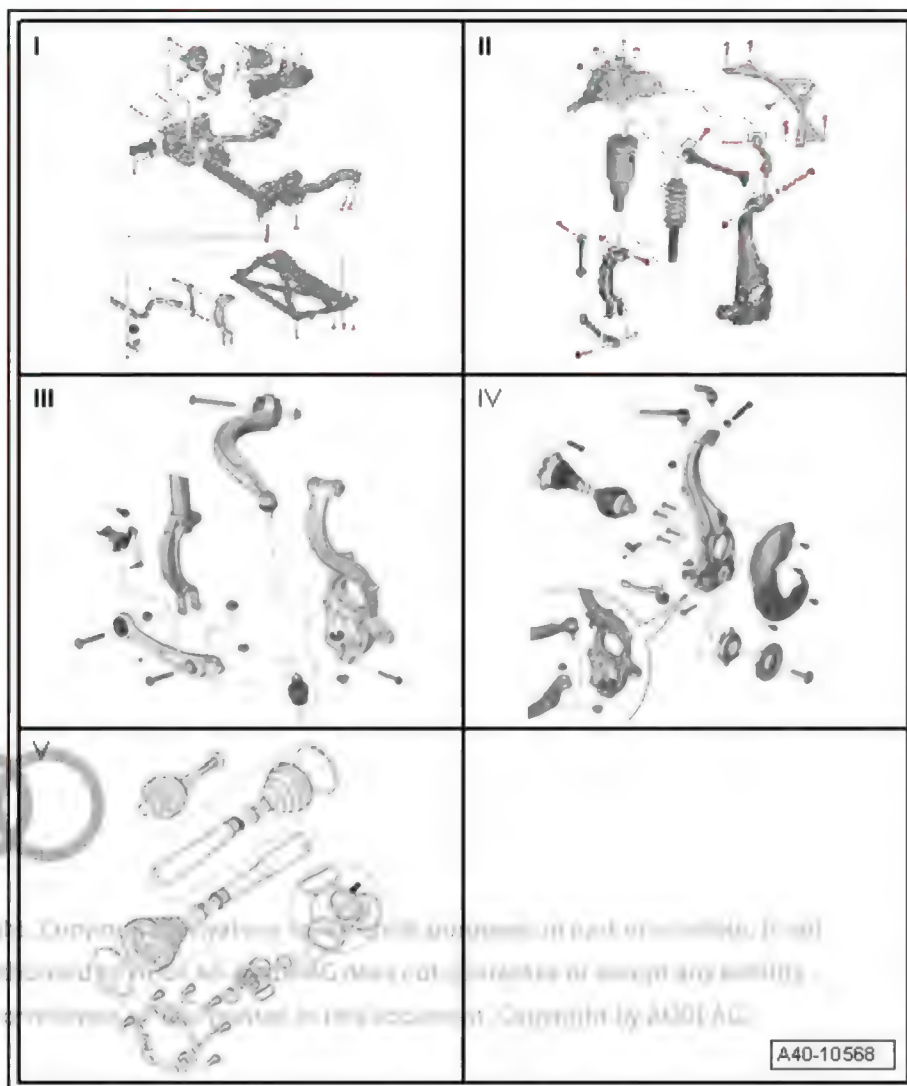
I - ⇒ "2 Subframe", page 28

II -  
⇒ "3 Suspension strut, upper  
links", page 57

III -  
⇒ "4 Lower suspension links,  
swivel joint", page 89

IV -  
⇒ "5 Wheel bearing",  
page 108

V -  
⇒ "6 Drive shaft", page 120





## 2 Subframe

⇒ "2.1 Exploded view - subframe", page 28

⇒ "2.2 Lowering subframe", page 30

⇒ "2.3 Removing and installing subframe with steering rack", page 40

⇒ "2.4 Removing and installing subframe cross brace", page 51

⇒ "2.5 Removing and installing subframe shield", page 52

⇒ "2.6 Removing and installing anti-roll bar", page 53

⇒ "2.7 Removing and installing coupling rod (for anti-roll bar)", page 55

### 2.1 Exploded view - subframe

#### 1 - Bolt

- ☐ Tightening torque ⇒  
Rep. gr. 10 ; Assembly  
mountings; Exploded  
view - assembly mount-  
ings

#### 2 - Engine mounting

- ☐ Removing and installing  
⇒ Rep. gr. 10 ; Assem-  
bly mountings; Remov-  
ing and installing engine  
mountings

#### 3 - Bracket for engine mount- ing

#### 4 - Nut

- ☐ 9 Nm

#### 5 - Bolt

- ☐ 9 Nm

#### 6 - Heat shield (upper section)

- ☐ Removing and installing  
⇒ [page 52](#)

#### 7 - Bolt

- ☐ 9 Nm

#### 8 - Bolt

- ☐ 9 Nm

#### 9 - Bolt

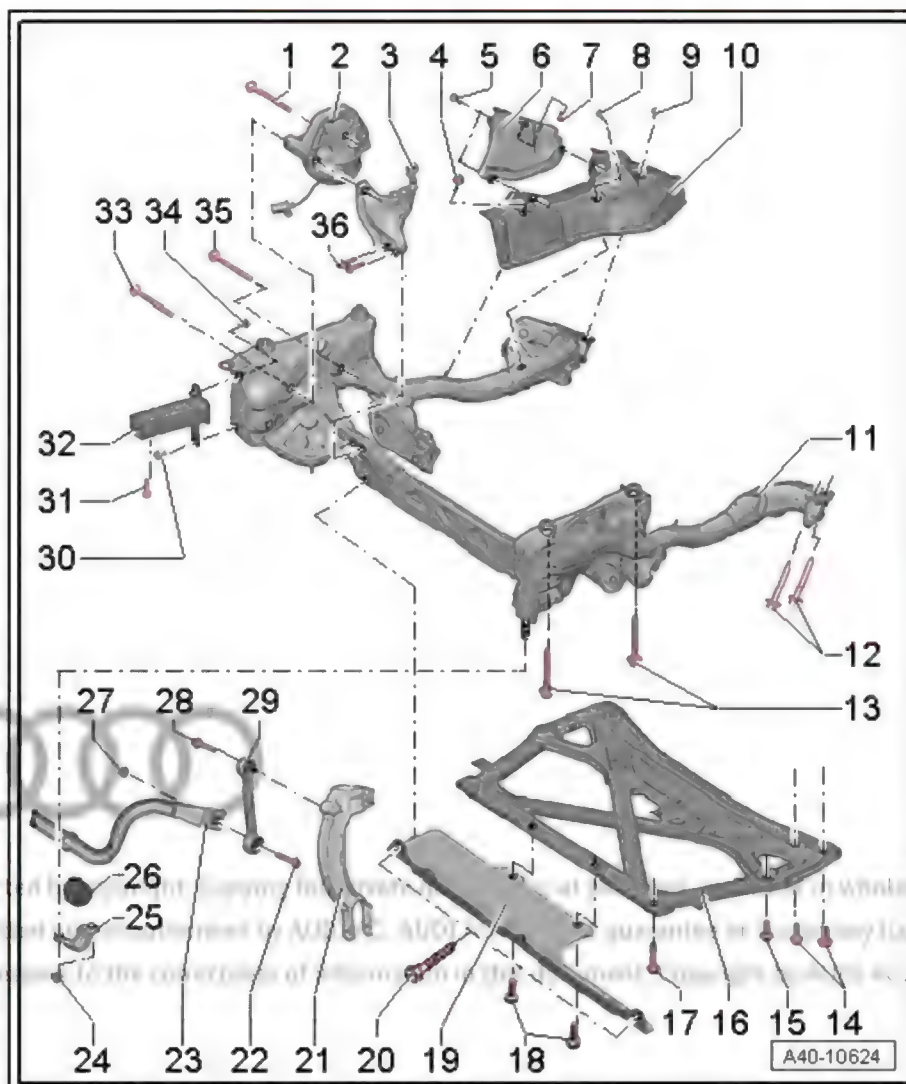
- ☐ 9 Nm

#### 10 - Heat shield (lower section)

- ☐ Removing and installing  
⇒ [page 52](#)

#### 11 - Subframe

- ☐ Removing and installing ⇒ [page 40](#)







#### Note

*The subframe must be pre-adjusted if it has been renewed or if it has been removed and the cross brace has been loosened for subsequent work ⇒ [page 50](#) .*

#### 12 - Bolt

- ☐ 115 Nm +90°
- ☐ Always renew if removed
- ☐ Tighten in several stages in diagonal sequence

#### 13 - Bolt

- ☐ 115 Nm +90°
- ☐ Always renew if removed
- ☐ Tighten in several stages in diagonal sequence

#### 14 - Bolt

- ☐ 90 Nm +180°
- ☐ Always renew if removed

#### 15 - Bolt

- ☐ 90 Nm +180°
- ☐ Always renew if removed

#### 16 - Subframe cross brace

- ☐ Removing and installing ⇒ [page 51](#)

#### 17 - Bolt

- ☐ 90 Nm +180°
- ☐ Always renew if removed

#### 18 - Bolt

- ☐ 20 Nm

#### 19 - Guard plate

#### 20 - Bolt

- ☐ Secures steering rack; tightening torque  
⇒ ["3.1.1 Exploded view - steering rack with track rods", page 402](#)

#### 21 - Shock absorber fork

- ☐ Removing and installing ⇒ [page 82](#)

#### 22 - Bolt

- ☐ 40 Nm +90°
- ☐ Always renew if removed
- ☐ Tighten in unladen position  
⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#) or  
⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#)

#### 23 - Anti-roll bar

- ☐ Removing and installing ⇒ [page 53](#)

#### 24 - Nut

- ☐ 25 Nm
- ☐ Always renew if removed
- ☐ Loosen/tighten nuts evenly on alternate sides





25 - Clamp

26 - Rubber bush

- ☐ The rubber bush must be installed with the opening facing towards the subframe.
- ☐ The anti-roll bar and rubber bush must be installed free of grease.

27 - Nut

- ☐ Always renew

28 - Bolt

- ☐ 40 Nm +90°
- ☐ Always renew if removed
- ☐ Tighten in unladen position  
⇒ "3.15 Lifting suspension to reference position (vehicles with air suspension)", page 15 or  
⇒ "3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12

29 - Coupling rod

- ☐ Note installation position ⇒ page 30 .
- ☐ Removing and installing ⇒ page 55

30 - Bolt

- ☐ 20 Nm

31 - Bolt

- ☐ 20 Nm

32 - Front longitudinal member (bottom)

- ☐ Not fitted on all engine versions
- ☐ Removing and installing ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Exploded view - impact bar .

33 - Bolt

- ☐ For attachment of engine mounting
- ☐ Tightening torque ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

34 - Bolt

- ☐ 20 Nm

35 - Bolt

- ☐ For attachment of engine mounting
- ☐ Tightening torque ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

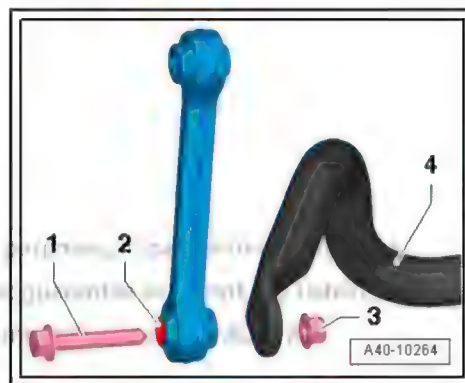
36 - Bolt

- ☐ Tightening torque ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

Installation position of coupling rod

Left and right coupling rods are identical.

Bolt -1- for connecting coupling rod to anti-roll bar -4- must be affixed to "small" face -2- of coupling rod collar and secured with nut -3-.



## 2.2 Lowering subframe

Special tools and workshop equipment required





◆ Torque wrench - V.A.G 1331-



◆ Torque wrench - V.A.G 1332-



◆ Engine and gearbox jack - VAS 6931-

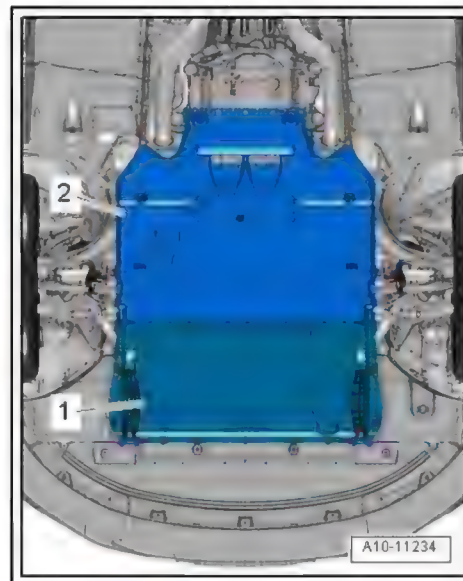


Procedure

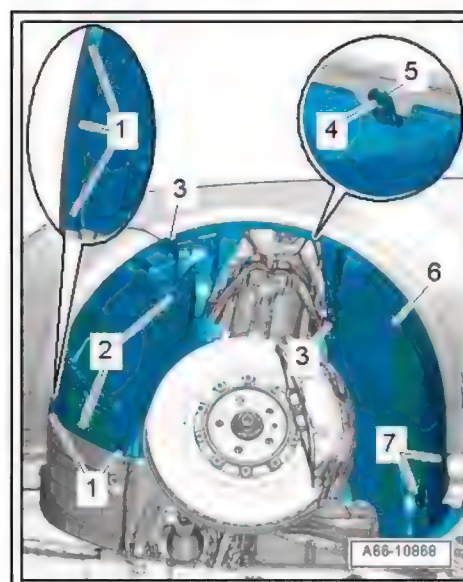
- Before starting work, measure distance from centre of wheel to lower edge of wheel housing  
⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs"](#), [page 12](#) or  
⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)"](#), [page 15](#) .
- Position vehicle on lifting platform ⇒ [page 18](#) .
- Detach engine cover panel.
- Take up weight of engine assembly with support bracket ⇒ Rep. gr. 10; Assembly mountings; Supporting engine in installation position .
- Remove front wheels.



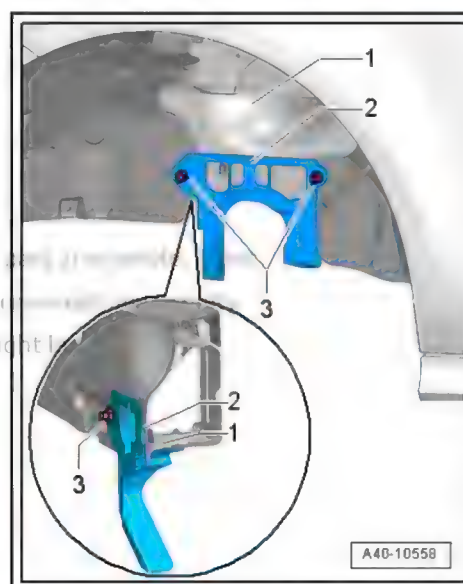
- Remove noise insulation panels -1- and -2- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .



- Remove front wheel housing liners (both sides) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .



- If fitted, remove nuts -3- and detach cover -2- for drive shaft on both sides.
- Tilt upper part of cover -2- outwards and disengage from underneath at flange -1-.

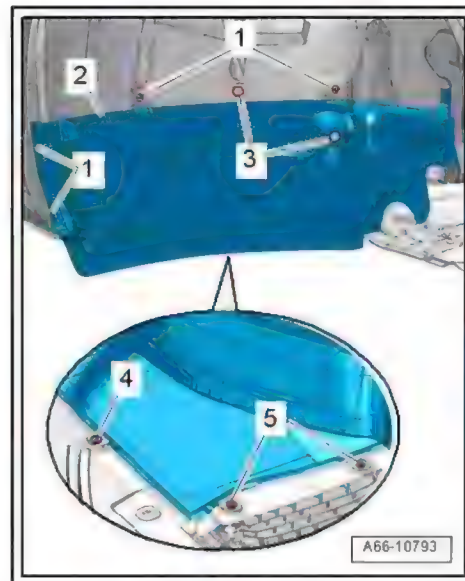


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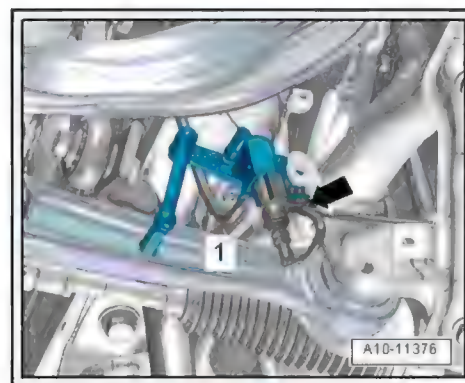




- Remove wheel spoilers (both sides) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front) .



- If fitted, unplug electrical connector -1- from vehicle level sender on both sides and detach clip -arrow-.
- Detach wiring clips for vehicle level sender from subframe on both sides and move wiring clear.
- Move electrical wire clear.

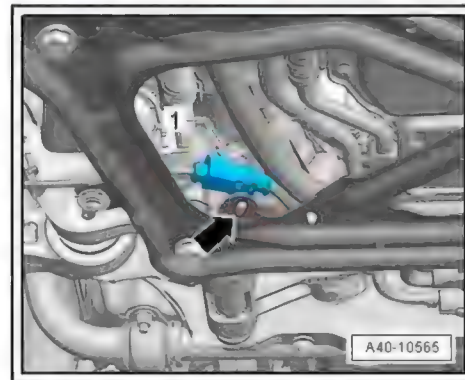


- Unplug electrical connector -1- for signal wires (CAN bus and terminal 15) at power steering control unit - J500- .
- Unplug electrical connector -2- for voltage supply (terminal 30) at power steering control unit - J500- (release retainer -arrow- and push catch downwards).

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- Release clip -arrow-, unplug electrical connector -1- and move electrical wiring clear.



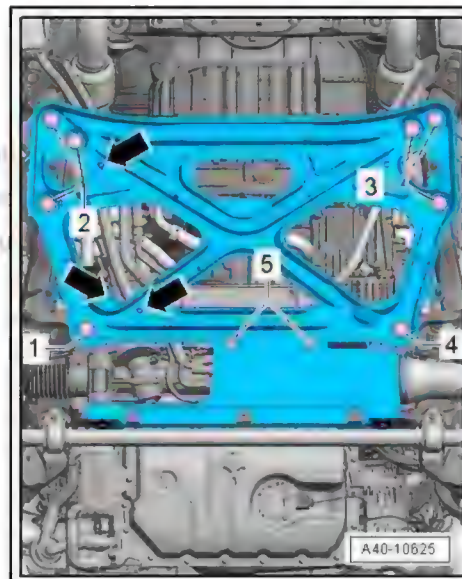


- If fitted, release remaining clips -arrows- on cross brace and move electrical wiring harness clear.

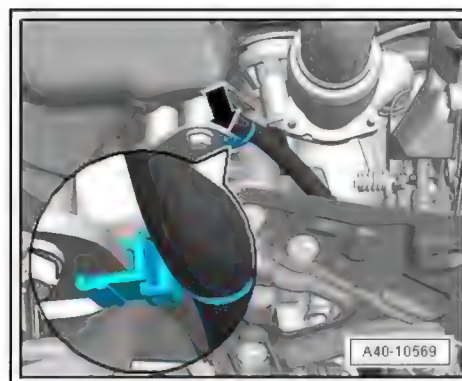


**Note**

-Items 1 ... 5- can be disregarded.



- If fitted, release clip -arrow- on subframe (rear left) and move electrical wiring harness clear.

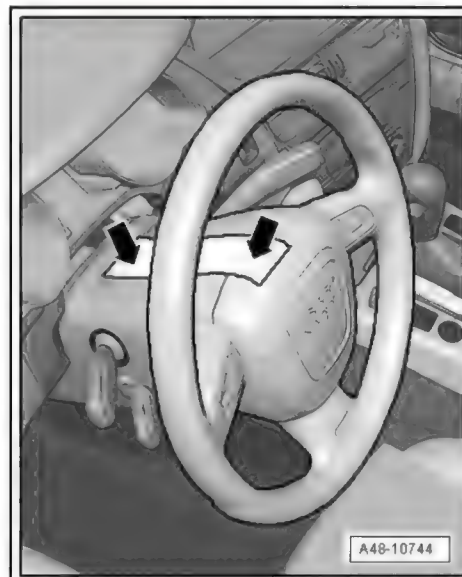


- To prevent unintentional turning, secure steering wheel in straight-ahead position with adhesive tape -arrow-.



**Note**

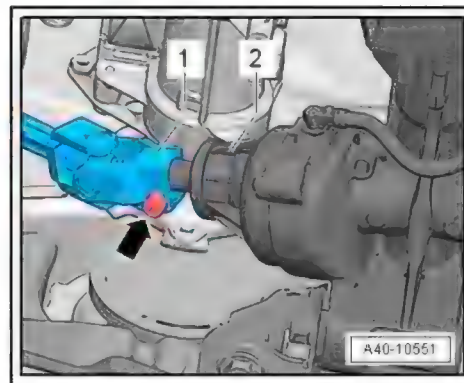
- ◆ Use adhesive tape that can be completely removed afterwards without leaving marks.
- ◆ Do not turn steering wheel while performing repair work, as otherwise airbag coil connector and return ring with slip ring - F138- could be damaged.



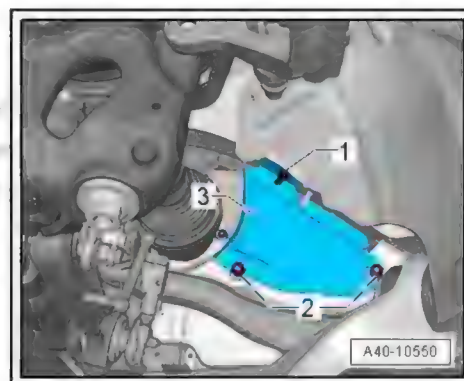




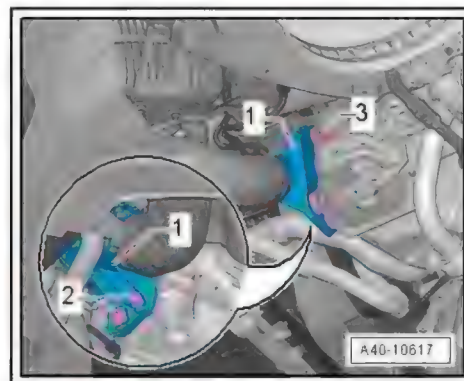
- Remove bolt -arrow-.
- Detach universal joint -1- from steering rack -2- and secure intermediate steering shaft to prevent it from dropping.



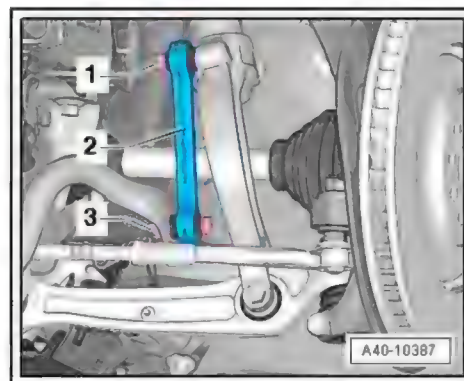
- Unscrew nut -1- and bolts -2- on both sides and detach heat shield (upper section) -3-.
- If fitted, remove gearbox oil cooling valve - N509- ➔ Rep. gr. 19 ; Coolant pump/thermostat assembly; Removing and installing coolant valves authorised by AUDI AG. AUDI AG does not assume any responsibility with respect to the correctness of information in this document.



- On vehicles with intermediate flange -1-, remove bolts -2 and 3- and move flange clear with hoses connected.



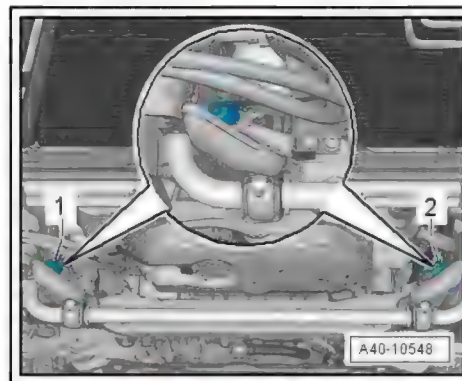
- Detach bolt -1- securing coupling rod to shock absorber fork on both sides.







- Unplug connectors -1- for right electrohydraulic engine mounting solenoid valve - N145- and -2- for left electrohydraulic engine mounting solenoid valve - N144- and move clear.

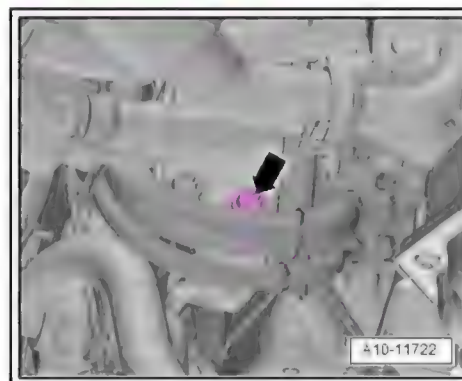


#### Audi RS 6

- Remove nut -arrow- and move coolant pipe -1- clear and slightly to one side.

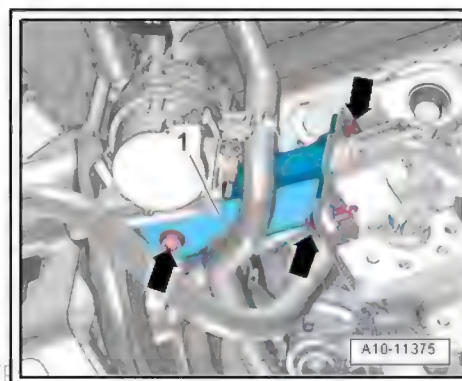


- Remove bolt -arrow- and move wiring harness clear.



Applies to vehicles with 6-cylinder or 8-cylinder engine

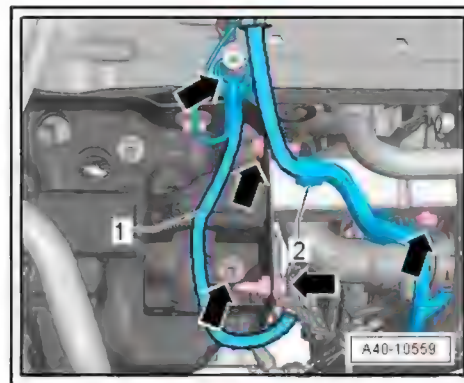
- Unscrew bolts -arrows- and detach front longitudinal member -1- (bottom left).



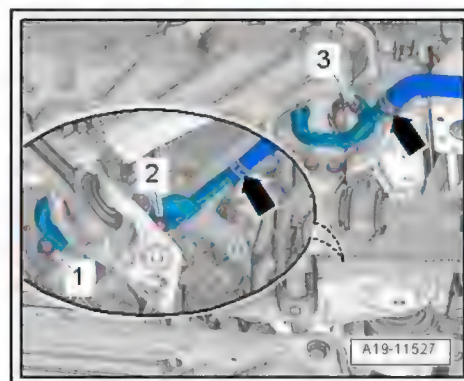
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- Remove nuts and bolts -arrows- and move clear earth wire -1- and electrical wire -2-.
- Detach front longitudinal member (bottom right).



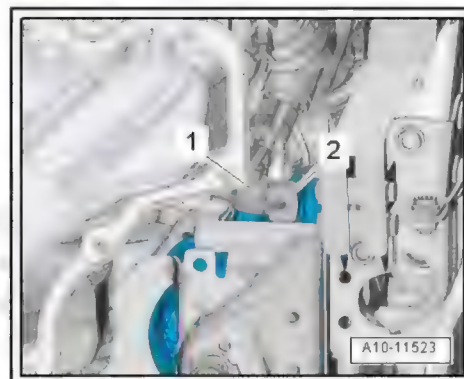
- Clamp off coolant hoses with hose clamps, up to Ø 25 mm -3094- and detach (to do so, release hose clips -arrows-).



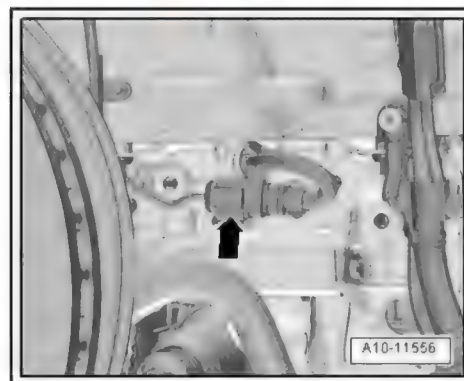
- Unplug electrical connectors -1, 2- on both sides.



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- Detach electrical connector -arrow- from bracket, unplug and guide through subframe.

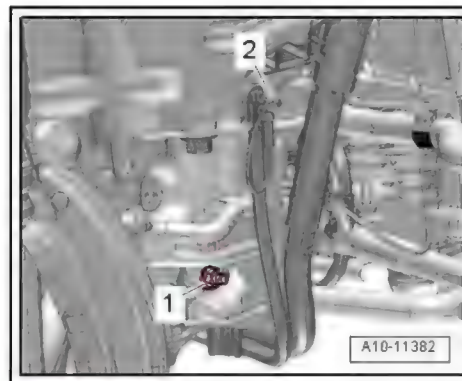




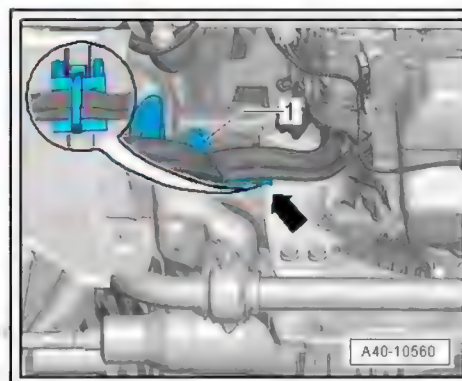


All vehicles (continued):

- If necessary, remove nuts -1 and 2- and move earth wire -arrow- to one side.

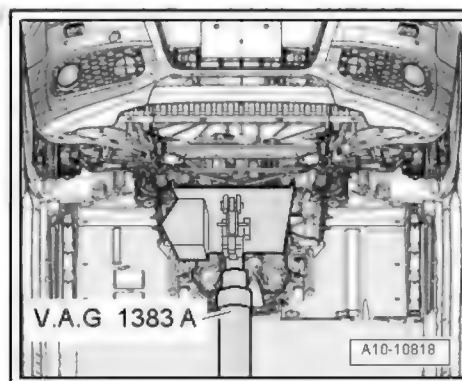


- Detach clip -arrow- from bracket for engine mounting on both sides and move clear electrical wiring with metal retainer -1-.
- On some engine versions, an electrical wire is also secured to the left engine mounting bracket (rear).

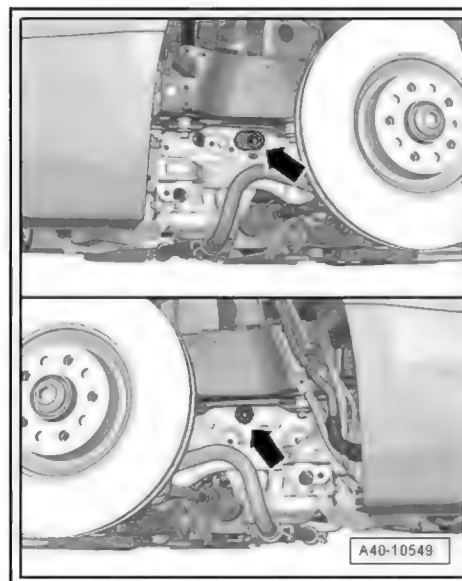


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- Support subframe using engine and gearbox jack -V.A.G 1383 A- with a suitable wooden block, as shown in illustration.



- Remove bolt -arrow- for engine mounting on both sides.





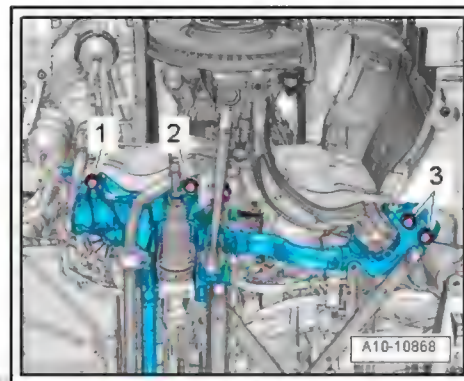


- Use a felt-tip pen to mark installation position of subframe on longitudinal members.
- Remove subframe bolts -1, 2 and 3- (left and right) in several stages in diagonal sequence.
- Lower subframe with engine and gearbox jack - V.A.G 1383 A- .



Note

When lowering subframe, make sure there is enough clearance for electrical wiring.



#### Installing

Installation is carried out in reverse sequence. Note the following:



#### NOTICE

With bolt ➔ [Item 1 \(page 384\)](#) screwed in by hand, try to pull off intermediate steering shaft to check that it is correctly seated. Then tighten bolt ➔ [Item 1 \(page 384\)](#) .



Note

- ◆ Bonded rubber bushes can only be turned to a limited extent. The suspension mountings must therefore only be tightened when the suspension is in the unladen position or reference position.
- ◆ Raising suspension to reference position  
➔ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#) or  
➔ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#)

- Position subframe at marked location with respect to body.
- Tighten subframe bolts in diagonal sequence.



#### CAUTION

All bolts and nuts must be fully tightened according to specifications before the vehicle is driven on public roads.

- Check and adjust wheel alignment as required, see chart ➔ [page 344](#) .
- On vehicles with automatic headlight range control, perform basic setting of headlights ➔ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .
- If the vehicle level sender has been removed and refitted or the linkage detached on vehicles with air suspension, the reference position must be re-adapted; start appropriate program on ➔ Vehicle diagnostic tester in [Guided Functions](#).
- If the reference position has been re-adapted on vehicles with lane departure warning, the camera control unit - J852- must be recalibrated ➔ [page 365](#) .

#### Tightening torques

- ◆ ➔ ["2.1 Exploded view - subframe", page 28](#)
- ◆ ➔ ["3.1 Exploded view - suspension strut, upper links", page 57](#)





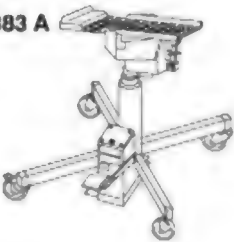
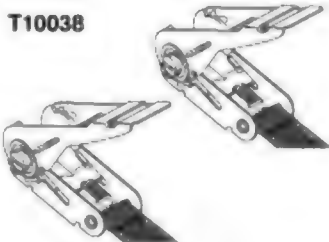


◆ ⇒ ["4.1 Exploded view - lower suspension links, swivel joint",  
page 89](#)

◆ ⇒ ["3.1.1 Exploded view - steering rack with track rods",  
page 402](#)

## 2.3 Removing and installing subframe with steering rack

Special tools and workshop  
equipment required

<b>V.A.G 1331</b> 	<b>V.A.G 1332</b> 
<b>V.A.G 1383 A</b> 	<b>T10038</b> 
	<b>G40-0065</b>

- ◆ Torque wrench - V.A.G 1331-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Engine and gearbox jack - VAS 6931- or -V.A.G 1383 A-
- ◆ Tensioning strap - T10038- , 2x





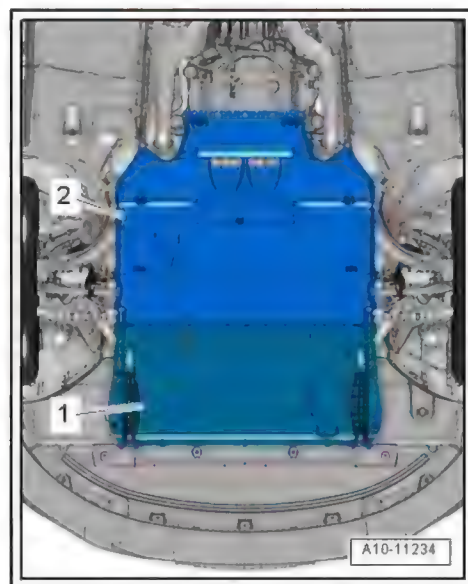
◆ Support - T10149-



◆ For vehicles with air suspension: vehicle diagnostic tester

Removing

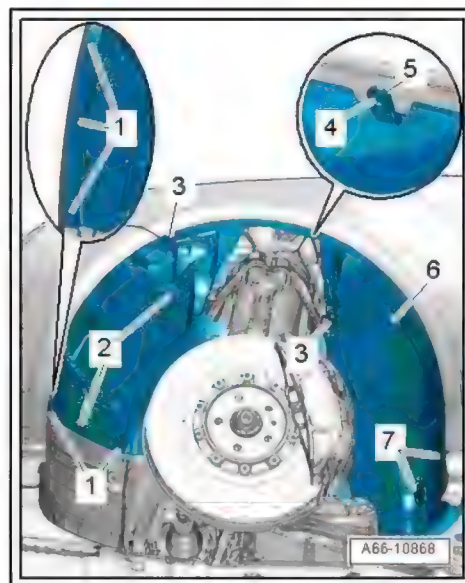
- Before starting work, measure distance from centre of wheel to lower edge of wheel housing  
⇒ "3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12 or  
⇒ "3.15 Lifting suspension to reference position (vehicles with air suspension)", page 15 .
- Position vehicle on lifting platform ⇒ page 18 .
- Vehicles with air spring system: bleed air spring system  
⇒ page 284 .
- Detach engine cover panel.
- Take up weight of engine assembly with support bracket ⇒ Rep. gr. 10 ; Assembly mountings; Supporting engine in installation position .
- Remove front wheels.
- Remove noise insulation panels -1- and -2- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .



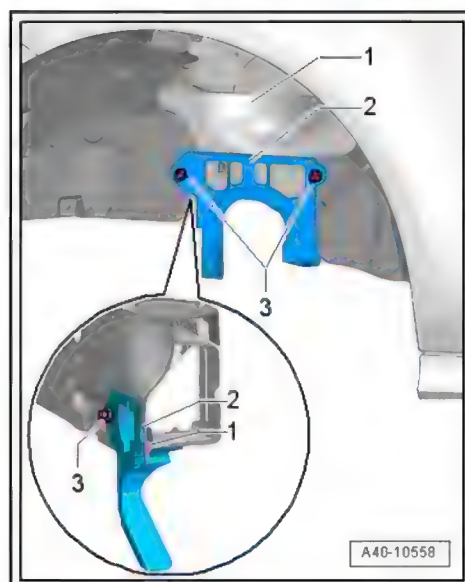
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- Remove front wheel housing liners (both sides) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .



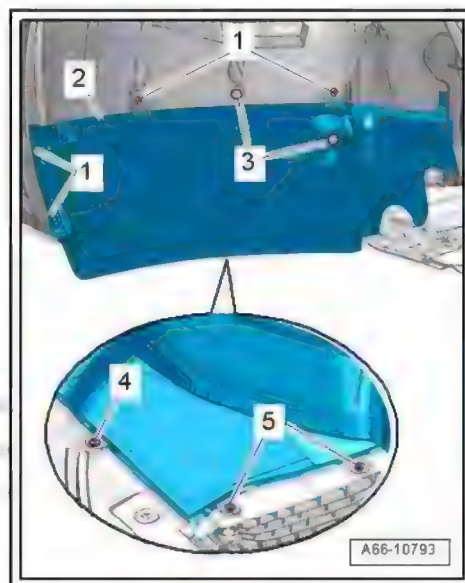
- If fitted, remove nuts -3- and detach cover -2- for drive shaft on both sides.
- Tilt upper part of cover -2- outwards and disengage from underneath at flange -1-.



- Remove wheel spoilers (both sides) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front) .

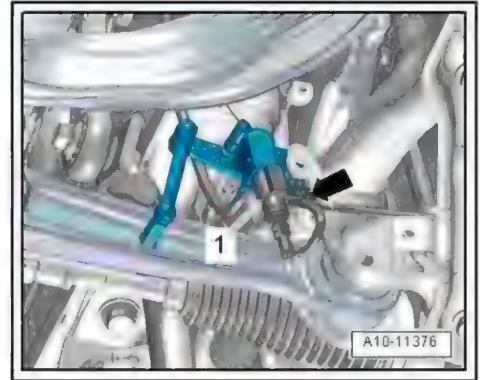


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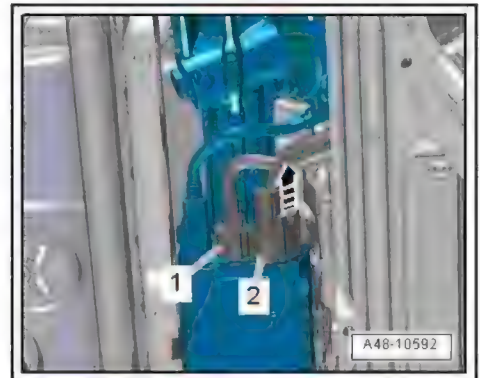




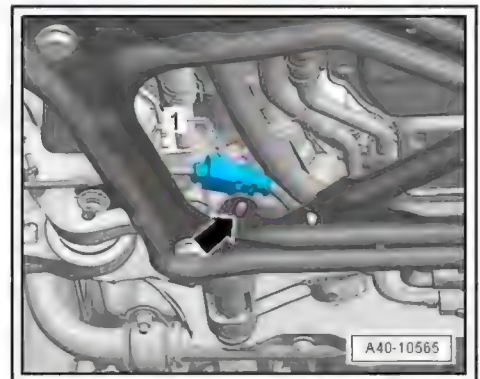
- If fitted, unplug electrical connector -1- from vehicle level sender on both sides and detach clip -arrow-.
- Detach wiring clips for vehicle level sender from subframe on both sides and move wiring clear.
- Move electrical wire clear.



- Unplug electrical connector -1- for signal wires (CAN bus and terminal 15) at power steering control unit - J500- .
- Unplug electrical connector -2- for voltage supply (terminal 30) at power steering control unit - J500- (release retainer -arrow- and push catch downwards).



- Release clip -arrow-, unplug electrical connector -1- and move electrical wiring clear.

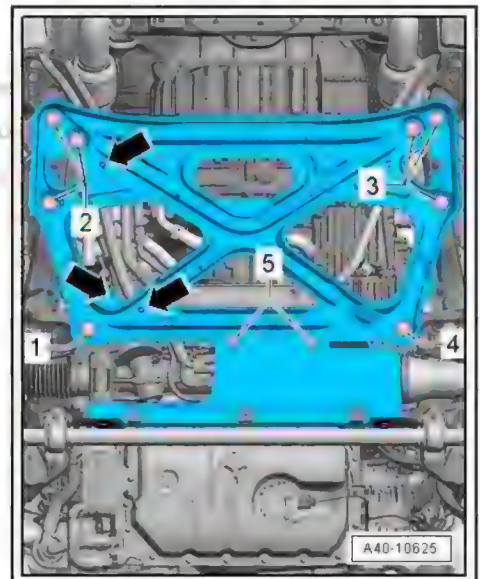


- If fitted, release remaining clips -arrows- on cross brace and move electrical wiring harness clear.



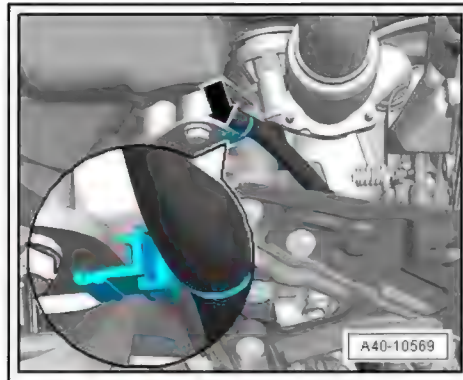
Note

-Items 1 ... 5- can be disregarded.





- If fitted, release clip -arrow- on subframe (rear left) and move electrical wiring harness clear.



- To prevent unintentional turning, secure steering wheel in straight-ahead position with adhesive tape -arrow-.

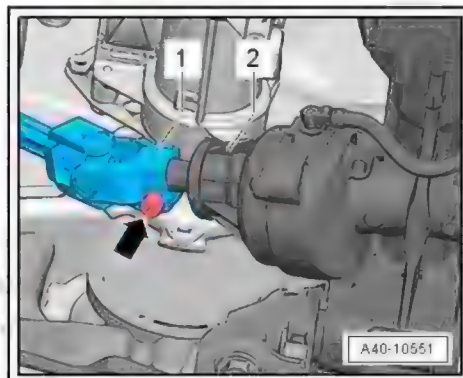


#### Note

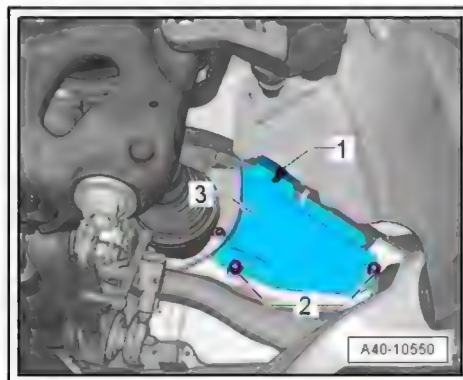
- ◆ Use adhesive tape that can be completely removed afterwards without leaving marks.
- ◆ Do not turn steering wheel while performing repair work, as otherwise airbag coil connector and return ring with slip ring - F138- could be damaged.



- Remove bolt -arrow-.
- Detach universal joint -1- from steering rack -2- and secure intermediate steering shaft to prevent it from dropping.



- Unscrew nut -1- and bolts -2- on both sides and detach heat shield (upper section) -3-.
- If fitted, remove gearbox oil cooling valve - N509- ⇒ Rep. gr. 19 ; Coolant pump/thermostat assembly; Removing and installing coolant valves .



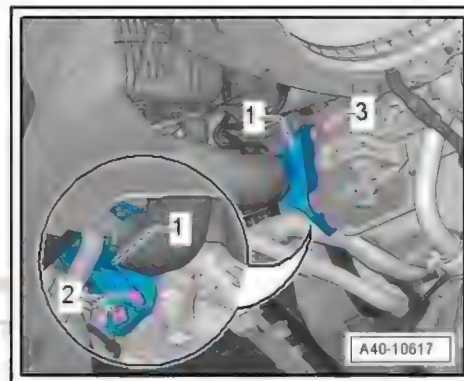




- On vehicles with intermediate flange -1-, remove bolts -2 and 3- and move flange clear with hoses connected.



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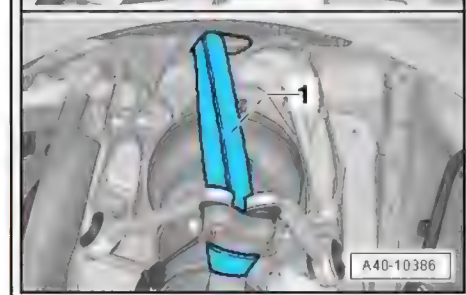
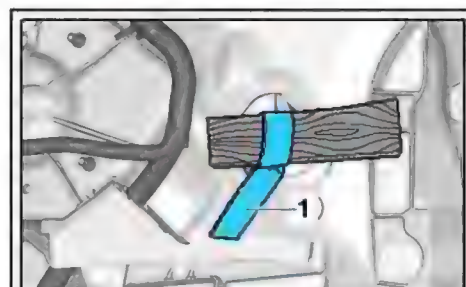
- Tie up wheel bearing housing with tensioning strap - T10038-1- on both sides as shown in illustration.



Note

*Wheel bearing housing must be supported to avoid damaging joints of upper links.*

- Remove track control link on both sides ➔ [page 91](#) .

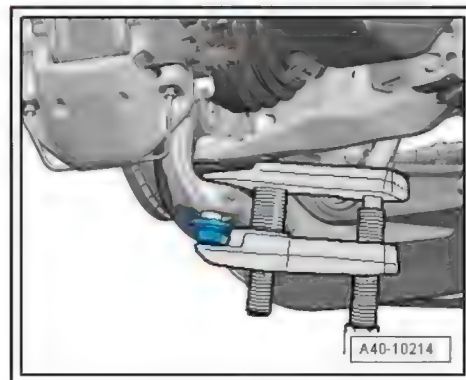


- Unscrew nut on joint pin of guide link (on both sides) until it is flush with end of thread. Counterhold joint pin if necessary.
- Press joint pin of guide link out of tapered seat using ball joint puller - T40042- .



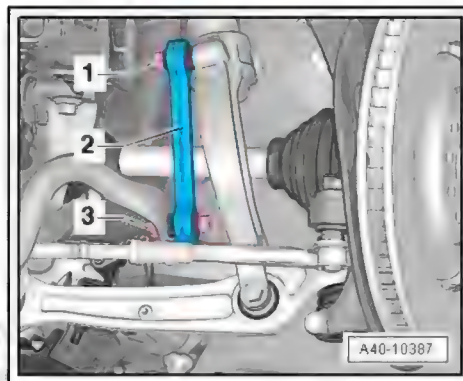
Note

- ◆ *Take care not to damage boot.*
- ◆ *Make sure the two lever arms of the puller are parallel when maximum force is exerted.*
- Detach guide link from wheel bearing housing on both sides of vehicle. Take care to avoid damage to boot on joint pin of guide link.

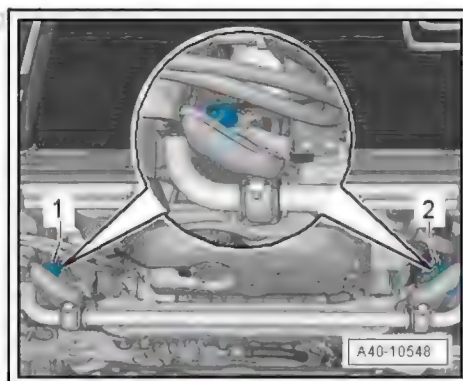




- Detach bolt -1- securing coupling rod to shock absorber fork on both sides.

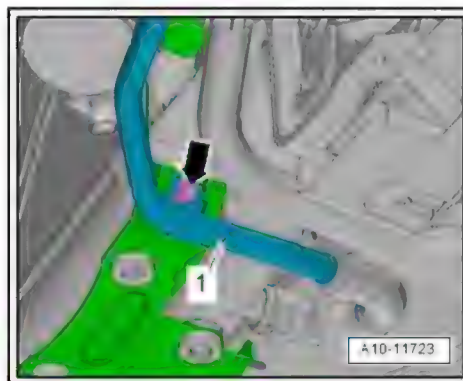


- Unplug connectors -1- for right electrohydraulic engine mounting solenoid valve - N145- and -2- for left electrohydraulic engine mounting solenoid valve - N144- and move clear.

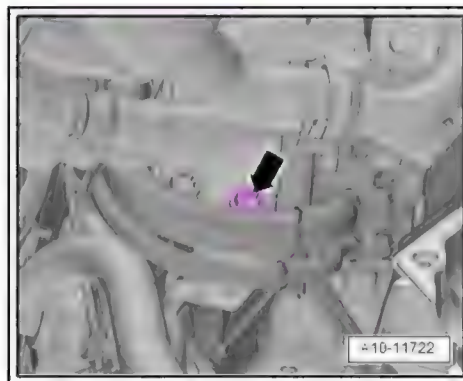


#### Audi RS 6

- Remove nut -arrow- and move coolant pipe -1- clear and slightly to one side.



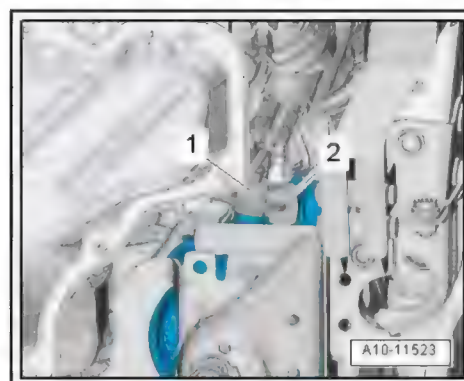
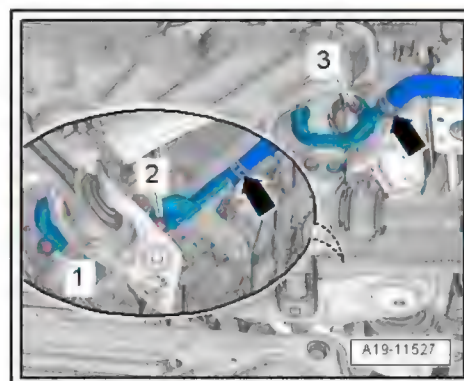
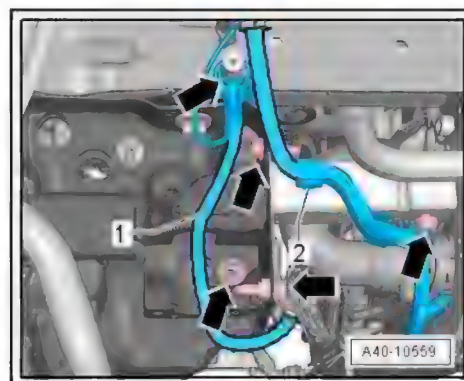
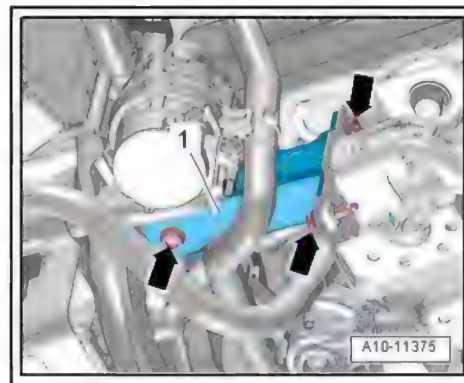
- Remove bolt -arrow- and move wiring harness clear.





Applies to vehicles with 6-cylinder or 8-cylinder engine

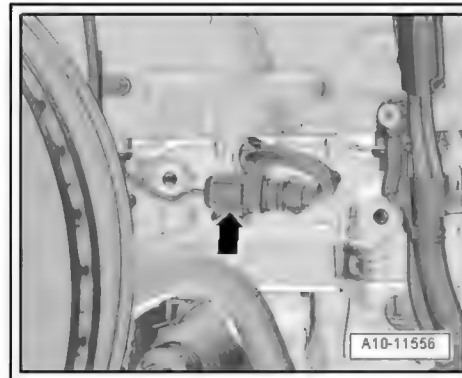
- Unscrew bolts -arrows- and detach front longitudinal member -1- (bottom left).
- Remove nuts and bolts -arrows- and move clear earth wire -1- and electrical wire -2-.
- Detach front longitudinal member (bottom right).
- Clamp off coolant hoses with hose clamps, up to Ø 25 mm -3094- and detach (to do so, release hose clips -arrows-).
- Unplug electrical connectors -1, 2- on both sides.



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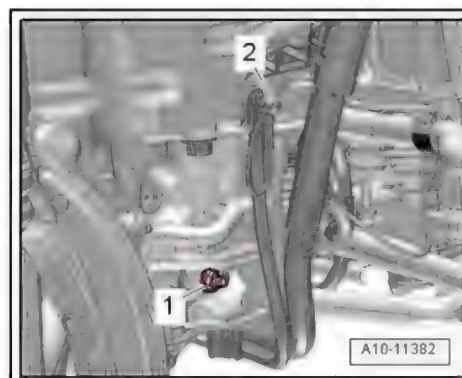


- Detach electrical connector -arrow- from bracket, unplug and guide through subframe.



All vehicles (continued):

- If necessary, remove nuts -1 and 2- and move earth wire -arrow- to one side.

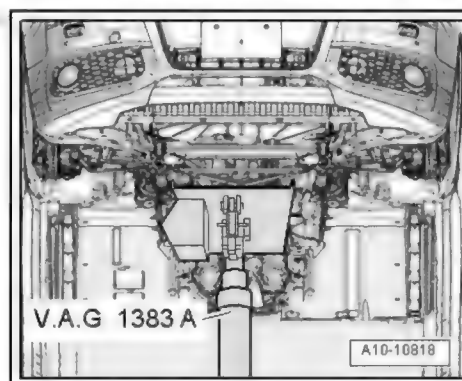


- Detach clip -arrow- from bracket for engine mounting on both sides and move clear electrical wiring with metal retainer -1-.
- On some engine versions, an electrical wire is also secured to the left engine mounting bracket (rear).



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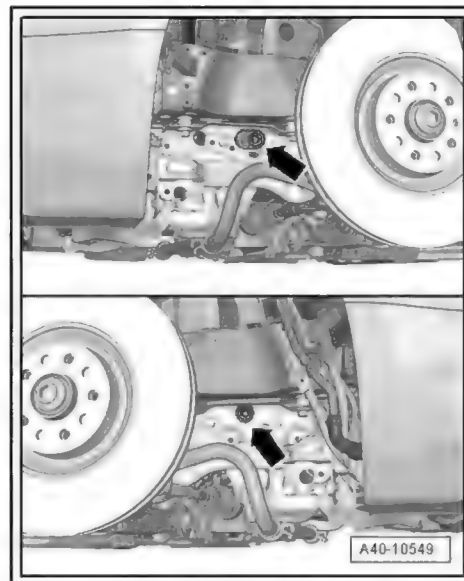
- Support subframe using engine and gearbox jack - V.A.G docu 1383 A- with a suitable wooden block, as shown in illustration.







- Remove bolt -arrow- for engine mounting on both sides.

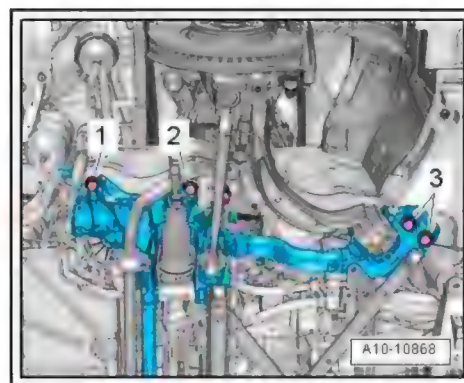


- Use a felt-tip pen to mark installation position of subframe on longitudinal members.
- Remove subframe bolts -1, 2 and 3- (left and right) in several stages in diagonal sequence.
- Lower subframe with engine and gearbox jack - V.A.G 1383 A- .



#### Note

*When lowering subframe, make sure there is enough clearance for electrical wiring.*



- If necessary, refit attachments for subsequent work.

#### Installing

Installation is carried out in reverse sequence. Note the following:

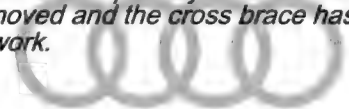


With bolt ➔ [Item 1 \(page 384\)](#) screwed in by hand, try to pull off intermediate steering shaft to check that it is correctly seated. Then tighten bolt ➔ [Item 1 \(page 384\)](#) .



#### Note

*The subframe must be pre-adjusted if it has been renewed or if it has been removed and the cross brace has been loosened for subsequent work.*



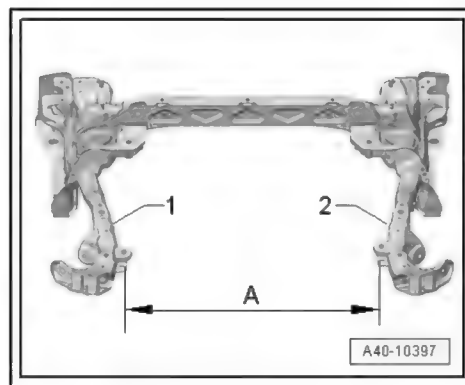
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#### Procedure for pre-adjustment of subframe:

- 1 - Place subframe upside down.
- 2 - Attach steering rack and guide links provisionally (hand-tighten bolts).
- 3 - Adjust longitudinal arms -1- and -2- so that distance -A- is attained (between inside edges of facing holes).
- 4 - Fit cross brace and secure with rear 6 bolts. Subframe is now pre-adjusted and self-supporting.
- 5 - Secure steering rack.
- 6 - Tighten 2 front bolts to secure cross brace.

Dimension -A- = 599 mm



#### Note

- ◆ *Bonded rubber bushes can only be turned to a limited extent. The suspension mountings must therefore only be tightened when the suspension is in the unladen position or reference position.*
- ◆ *Raising suspension to reference position*  
⇒ "3.15 Lifting suspension to reference position (vehicles with air suspension)", page 15 or  
⇒ "3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12
- Position subframe at marked location with respect to body.
- Tighten subframe bolts in diagonal sequence.

#### CAUTION

All bolts and nuts must be fully tightened according to specifications before the vehicle is driven on public roads.

- Check and adjust wheel alignment as required, see chart  
⇒ page 344 .
- On vehicles with automatic headlight range control, perform basic setting of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .
- If the vehicle level sender has been removed and refitted or the linkage detached on vehicles with air suspension, the reference position must be re-adapted; start appropriate program on ⇒ Vehicle diagnostic tester in Guided Functions.
- If the reference position has been re-adapted on vehicles with lane departure warning, the camera control unit - J852- must be recalibrated ⇒ page 365 .

#### Tightening torques

- ◆ ⇒ "2.1 Exploded view - subframe", page 28
- ◆ ⇒ "3.1 Exploded view - suspension strut, upper links", page 57
- ◆ ⇒ "4.1 Exploded view - lower suspension links, swivel joint", page 89
- ◆ ⇒ "3.1.1 Exploded view - steering rack with track rods", page 402





## 2.4 Removing and installing subframe cross brace

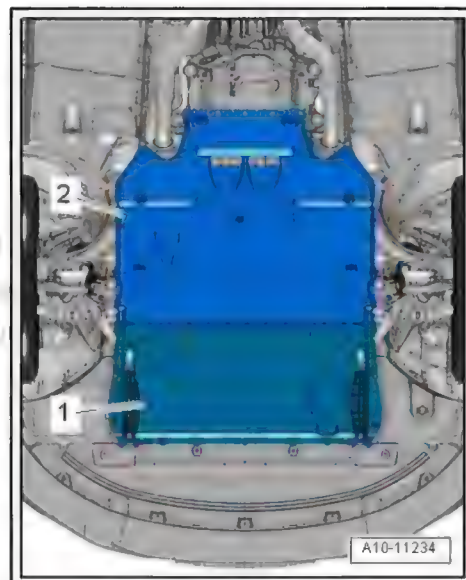
Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1332-



### Removing

- Position vehicle on lifting platform ➔ [page 18](#) .
- Remove noise insulation panels -1 and 2- ➔ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .



- Release clips for wiring harness -arrows-.
- Remove bolts -1 to 5- and detach cross brace.

### CAUTION

Risk of damage to running gear components.

Never place the vehicle on its wheels if the subframe, steering rack or subframe cross brace is not correctly installed!

The vehicle must not be supported on the subframe or the subframe cross brace (e.g. using a trolley jack or similar)!

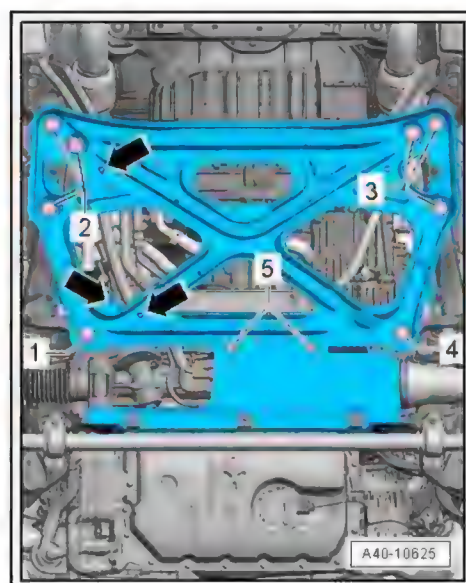
If vehicle is to be moved, cross brace must be fitted with old bolts and tightened to specified torque without turning further through specified angle.

### Installing

Installation is carried out in reverse sequence.

### Tightening torques

- ◆ ➔ ["2.1 Exploded view - subframe", page 28](#)







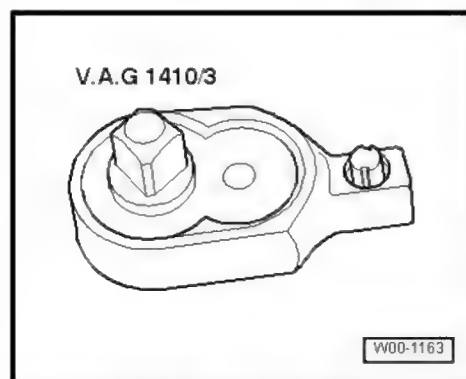
## 2.5 Removing and installing subframe shield

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1410-

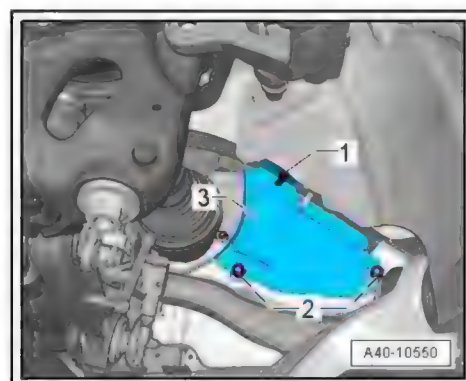


- ◆ Ratchet - V.A.G 1410/3-



### Removing

- Position vehicle on lifting platform ➔ [page 18](#) .
- Remove noise insulation ➔ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove nut -1- and bolts -2- and take out heat shield (upper section) -3-.
- If fitted, remove gearbox oil cooling valve - N509- ➔ Rep. gr. 19 ; Coolant pump/thermostat assembly; Removing and installing coolant valves .



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- Remove bolts -arrows- and nut -1-.
- Take out heat shield (lower section) -2- towards rear of vehicle between body and subframe.

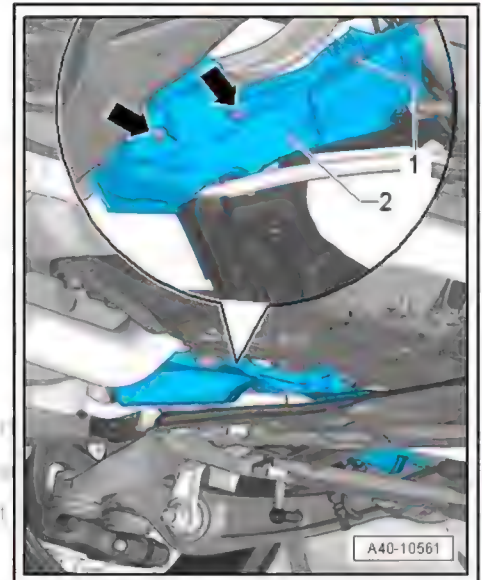
On vehicles with 6-cylinder TDI engine, the cross brace must first be removed ⇒ [page 51](#) before removing the lower section of the heat shield (right-side) as described in the previous step.

#### Installing

Installation is carried out in reverse sequence. Note the following:

#### Tightening torques

- ◆ ⇒ ["2.1 Exploded view - subframe", page 28](#)



## 2.6 Removing and installing anti-roll bar

Special tools and workshop equipment required

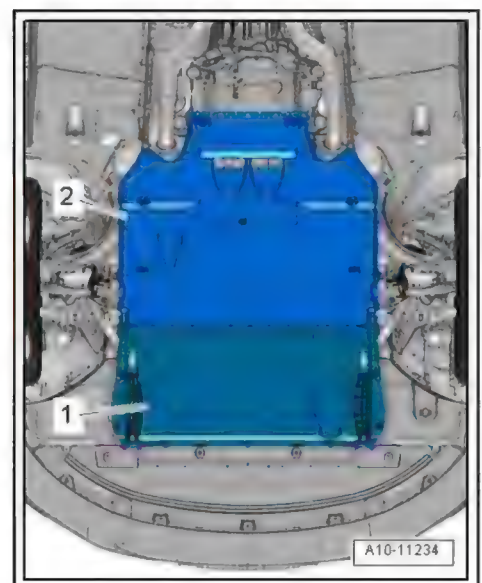
- ◆ Torque wrench - V.A.G 1332-



- ◆ For vehicles with air suspension: vehicle diagnostic tester

#### Removing

- Before starting work, measure distance from centre of wheel to lower edge of wheel housing  
⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#) or  
⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#) .
- Position vehicle on lifting platform ⇒ [page 18](#) .
- Remove noise insulation -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .







- Detach bolted connection -2- on both sides.
- Unscrew bolt connection -1- on both sides and detach clamps -3-.
- Take out anti-roll bar.

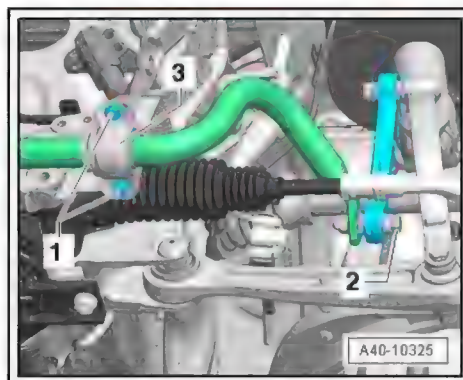
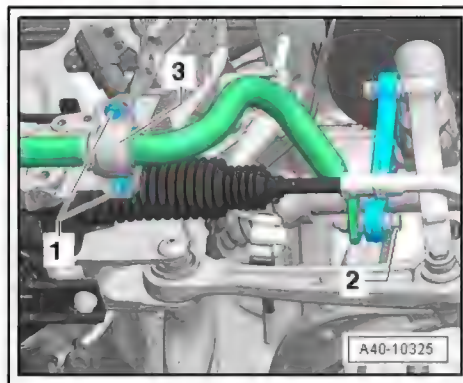
#### Installing

Installation is carried out in reverse sequence. Note the following:



#### Note

- ◆ *Bonded rubber bushes can only be turned to a limited extent. The suspension mountings must therefore only be tightened when the suspension is in the unladen position or reference position.*
  - ◆ *Raising suspension to unladen position or reference position  
⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#) or  
⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#)*
  - ◆ *Anti-roll bar and rubber bushes must be free of grease.*
  - ◆ *Fit the rubber bush with the opening facing towards the contact surface of the subframe.*
  - ◆ *Where fitted: if studs -1- have been slackened, screw in as far as stop before refitting clamp -3-.*
- Refit bolt connection -1-, but do not tighten yet.
  - Fit bolts -2- on both sides, but do not tighten.

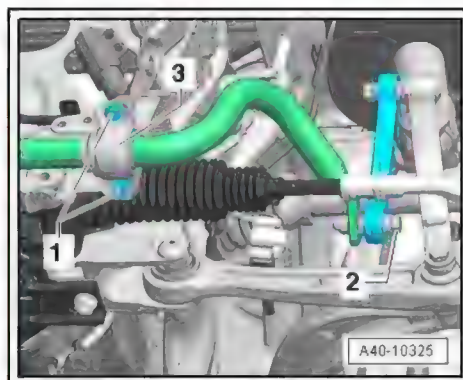


- Raising suspension to reference position  
⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#) or  
⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#)
- Tighten bolted connections -1- and -2-.



#### Note

- ◆ *Tighten bolts -1- evenly on alternate sides.*
- ◆ *The rubber bush must be installed with the opening facing towards the subframe.*
- ◆ *The anti-roll bar and rubber bush must be installed free of grease.*



#### Tightening torques

- ◆ ⇒ ["2.1 Exploded view - subframe", page 28](#)





## 2.7 Removing and installing coupling rod (for anti-roll bar)

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1332-



- ◆ For vehicles with air suspension: vehicle diagnostic tester

### Removing

- Before starting work, measure distance from centre of wheel to lower edge of wheel housing  
⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#) or  
⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#) .
- Position vehicle on lifting platform ⇒ [page 18](#) .
- Detach bolted connections -1- and -3-.
- Take out coupling rod -2-.

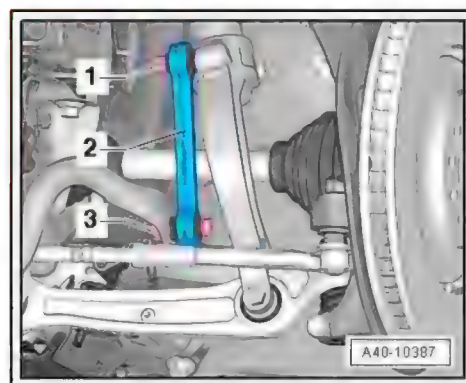
### Installing

Installation is carried out in reverse sequence. Note the following:



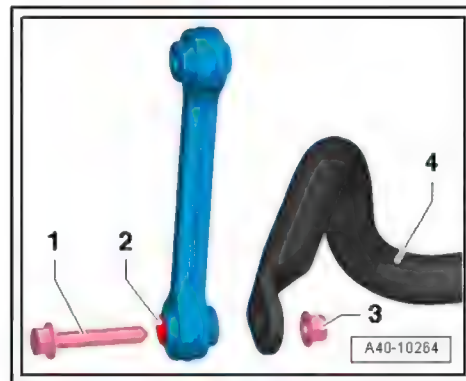
#### Note

- ◆ *Note installation position of coupling rod.*
- ◆ *Bonded rubber bushes can only be turned to a limited extent. The suspension mountings must therefore only be tightened when the suspension is in the unladen position or reference position.*
- ◆ *Raising suspension to unladen position*  
⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#) or  
⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#)





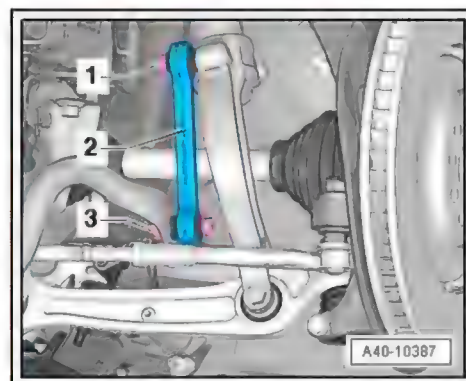
- Bolt -1- for connecting coupling rod to anti-roll bar -4- must be affixed to "small" face -2- of coupling rod collar and secured with nut -3-.



- Fit bolts -1- and -3- but do not tighten.
- Raise suspension to unladen position  
⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#) or  
⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#).
- Tighten bolted connections -1- and -3-.

#### Tightening torques

- ◆ ⇒ ["2.1 Exploded view - subframe", page 28](#)



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### 3 Suspension strut, upper links

⇒ ["3.1 Exploded view - suspension strut, upper links", page 57](#)

⇒ ["3.2 Removing and installing suspension strut", page 59](#)

⇒ ["3.3 Servicing suspension strut", page 66](#)

⇒ ["3.4 Removing and installing upper links", page 74](#)

⇒ ["3.5 Renewing bush for upper link", page 79](#)

⇒ ["3.6 Charging suspension strut", page 80](#)

⇒ ["3.7 Removing and installing shock absorber fork", page 82](#)

⇒ ["3.8 Removing and installing body brace", page 87](#)

#### 3.1 Exploded view - suspension strut, upper links

1 - Suspension turret

2 - Nut

- ☐ 30 Nm
- ☐ Loosen and tighten in diagonal sequence
- ☐ Always renew if removed

3 - Bolt

- ☐ 20 Nm

4 - Body brace

- ☐ Removing and installing  
⇒ [page 87](#)

5 - Bolt

- ☐ 20 Nm

6 - Bolt

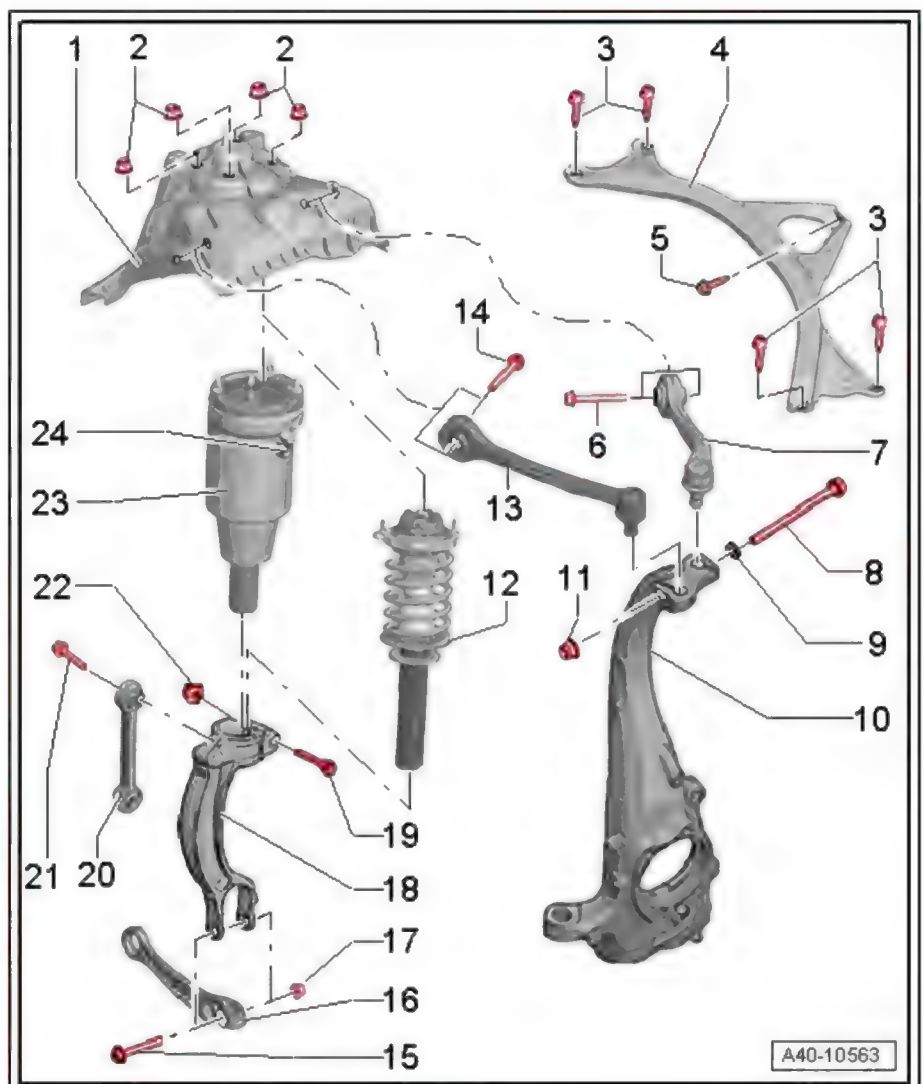
- ☐ 50 Nm +90°
- ☐ Always renew if removed
- ☐ Vehicle must be in reference position when tightening  
⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#)  
or  
⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#)

7 - Upper link (rear)

- ☐ Removing and installing  
⇒ [page 74](#)
- ☐ Renewing bonded rubber bush for upper link (rear) ⇒ [page 79](#)

8 - Bolt

- ☐ Always renew if removed







9 - Washer

10 - Wheel bearing housing

11 - Nut

- ☐ 40 Nm
- ☐ Always renew if removed

12 - Coil spring/shock absorber

- ☐ Removing and installing ⇒ [page 59](#)
- ☐ Servicing ⇒ [page 66](#)

13 - Upper link (front)

- ☐ Removing and installing ⇒ [page 74](#)
- ☐ Renewing bonded rubber bush for upper link (front) ⇒ [page 79](#)

14 - Bolt

- ☐ 50 Nm +90°
- ☐ Always renew if removed
- ☐ Vehicle must be in reference position when tightening  
⇒ [“3.15 Lifting suspension to reference position \(vehicles with air suspension\)”, page 15](#) or  
⇒ [“3.14 Lifting suspension to unladen position - vehicles with coil springs”, page 12](#)

15 - Bolt

- ☐ Always renew if removed

16 - Track control link

17 - Nut

- ☐ 90 Nm +90°
- ☐ Always renew if removed
- ☐ Vehicle must be in reference position when tightening ⇒ [page 15](#)

18 - Shock absorber fork

- ☐ Depending on version, with vibration damper ⇒ [page 59](#) . For correct version, refer to ⇒ Electronic parts catalogue
- ☐ Removing and installing shock absorber fork ⇒ [page 82](#)

19 - Bolt

- ☐ 40 Nm +180°
- ☐ Always renew if removed

20 - Coupling rod

21 - Bolt

- ☐ 40 Nm +90°
- ☐ Always renew if removed
- ☐ Vehicle must be in reference position when tightening  
⇒ [“3.15 Lifting suspension to reference position \(vehicles with air suspension\)”, page 15](#) or  
⇒ [“3.14 Lifting suspension to unladen position - vehicles with coil springs”, page 12](#)

22 - Nut

- ☐ Always renew if removed

23 - Air spring strut

- ☐ Removing and installing ⇒ [page 62](#)
- ☐ Servicing ⇒ [page 70](#)
- ☐ Note different running gear versions ⇒ [page 345](#)

24 - Connection piece for air pipe and residual pressure valve

- ☐ Tightening torque ⇒ [Item 5 \(page 71\)](#)
- ☐ Only to be unscrewed with vehicle raised and no load on air spring strut (otherwise danger of injury due to vehicle dropping)





- ☐ In the event of leakage, refer to ⇒ [“3.5 Servicing air pipe”, page 296](#) or ⇒ [“3.5 Servicing air pipe”, page 296](#)
- ☐ Clean pipe connection before loosening
- ☐ Air will escape when this component is unscrewed
- ☐ Protect pipe connection from dirt
- ☐ Residual pressure valve must not be loosened

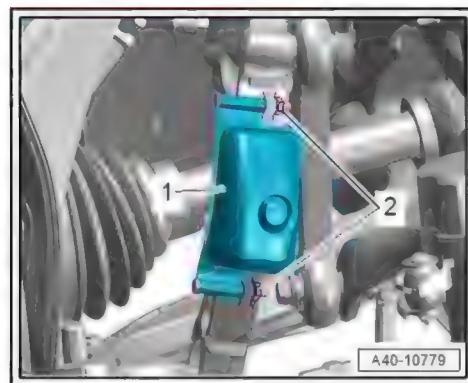
#### Vibration damper for shock absorber fork

##### 1 - Vibration damper

- ◆ Installation position: Marked L for left/R for right (visible on top when installed)

##### 2 - Nuts

- ◆ Renew after removing
- ◆ Different tightening torques:
  - ◆ For vibration damper -4G0 413 143- / -144- : 9 Nm
  - ◆ For vibration damper -4G0 413 143A- / -144A- : 10 Nm + 45°



## 3.2 Removing and installing suspension strut

⇒ [“3.2.1 Removing and installing suspension strut \(coil spring/shock absorber\)”, page 59](#)

⇒ [“3.2.2 Removing and installing suspension strut \(air spring strut\)”, page 62](#)

### 3.2.1 Removing and installing suspension strut (coil spring/shock absorber)

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



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V.A.G 1331



W00-11166





◆ Torque wrench - V.A.G 1332-



◆ Spreader - 3424-



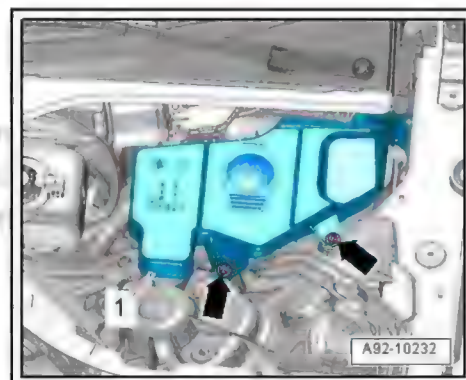
◆ Tensioning strap - T10038-



◆ Wooden block (hardwood) 30 x 50 x 100 mm

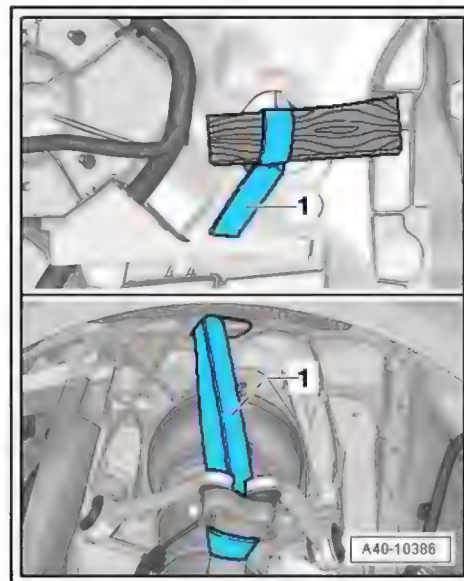
Removing

- Place vehicle on lifting platform.
- Remove body brace ⇒ [page 87](#).
- Unscrew bolts -arrows- and push washer fluid reservoir -1- slightly to one side.
- Remove wheel ⇒ [page 329](#).



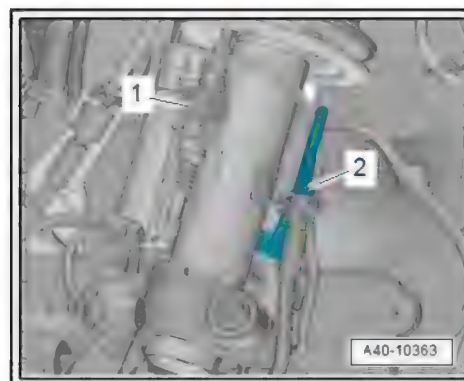


- Tie up wheel bearing housing with tensioning strap - T10038-1-, as shown in illustration.



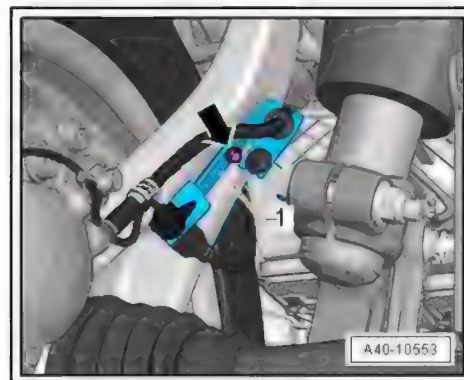
#### Vehicles with Dynamic Ride Control (DRC)

- Discharge DRC system ⇒ [page 318](#) .
- If vehicle is equipped with driver-adjustable DRC and variable damping, detach electrical connector -1- (on additional element with integral DC motor) from bracket, unplug connector and move clear.
- Remove union screw -2- and move hose clear.
- Protect open connections from dirt.



#### All vehicles

- Remove bolt -arrow- and detach bracket -1- for brake line and electrical wiring from wheel bearing housing.
- Remove shock absorber fork ⇒ [page 82](#) .



- Unscrew nuts -arrows- and take out coil spring/shock absorber.

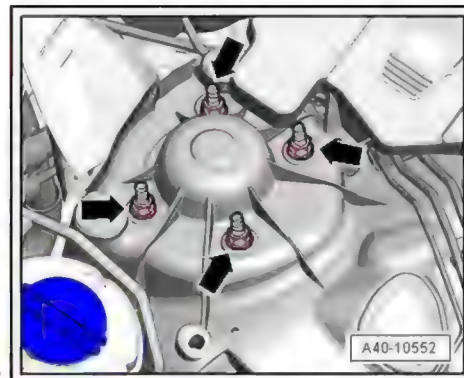


#### Note

*When removing coil spring/shock absorber, take care not to damage protective boots on steering and drive shaft.*

#### Installing

Installation is carried out in reverse sequence. Note the following:



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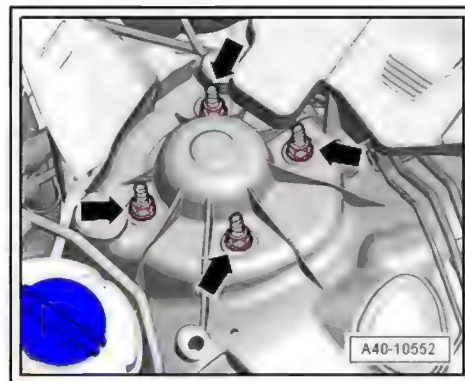
- Start by attaching coil spring/shock absorber to body.
- Tighten new nuts -arrows- in diagonal sequence.

Vehicles with Dynamic Ride Control (DRC)

- Fill DRC system ⇒ [page 318](#) .
- Fit wheel ⇒ [page 329](#) .

Tightening torques

- ◆ ⇒ "3.1 Exploded view - suspension strut, upper links", [page 57](#)
- ◆ ⇒ "4.1 Exploded view - lower suspension links, swivel joint", [page 89](#)



### 3.2.2 Removing and installing suspension strut (air spring strut)



NOTICE

Before air spring strut is installed or re-installed, it must be sealed at top cable guide to prevent water entering.

This applies when re-installing an air spring strut that was fitted previously and when installing a new air spring strut.

Special tools and workshop

<p>V.A.G 1331</p>	<p>V.A.G 1332</p>
<p>V.A.G 1783</p>	<p>V.A.G 1783/1</p>
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#### equipment required

- ◆ Torque wrench - V.A.G 1331-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Torque wrench - V.A.G 1783-
- ◆ Open end spanner insert (10 mm) - V.A.G 1783/1-
- ◆ Wooden block (hardwood) 30 x 50 x 1000 mm
- ◆ Spreader - 3424-



- ◆ Tensioning strap - T10038-



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- ◆ Vehicle diagnostic tester

#### Removing



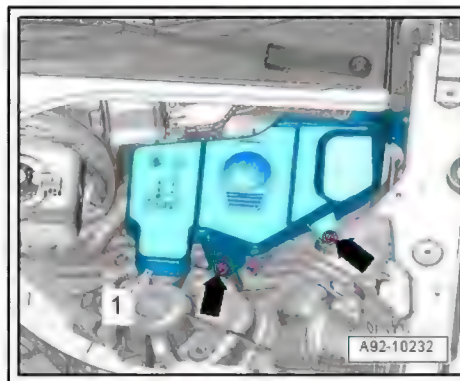
#### Note

*Take care to prevent indentations forming in boot on air spring strut during assembly work.*

- Position vehicle on lifting platform ➔ [page 18](#) .
- Remove body brace ➔ [page 87](#) .



- Unscrew bolts -arrows- and push washer fluid reservoir -1- slightly to one side.
- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).
- Remove wheel ⇒ [page 329](#) .
- Clean area around air connection on air spring strut.

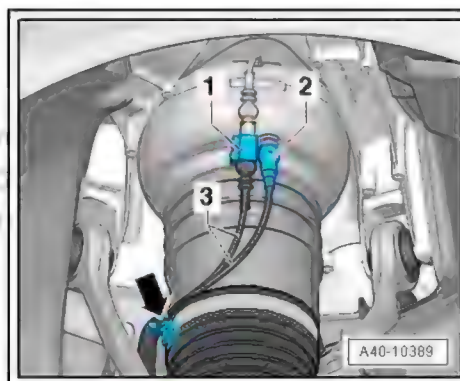


- Unplug electrical connector -1-.
- Unscrew connection piece at residual pressure valve -2-. This will allow air to escape.
- Detach clip -arrow- and move pipes/wiring -3- clear.

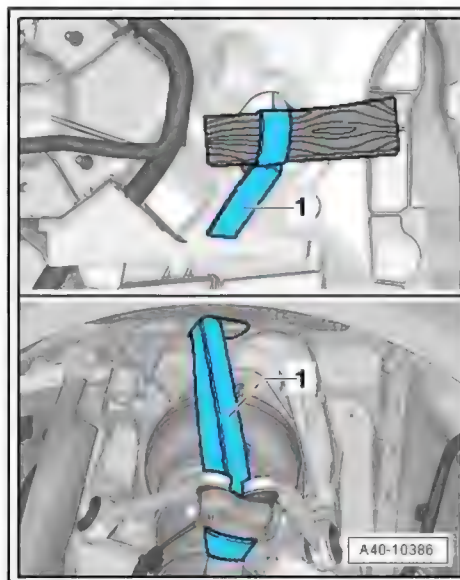


#### Note

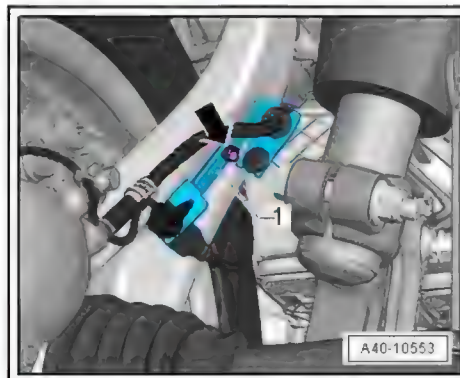
*The residual pressure valve -2- MUST NOT be loosened or removed.*



- Close both connections. Take care to prevent dirt entering the connections.
- Tie up wheel bearing housing with tensioning strap - T10038-1-, as shown in illustration.



- Remove bolt -arrow- and detach bracket -1- for brake line and electrical wiring from wheel bearing housing.
- Remove shock absorber fork ⇒ [page 82](#) .







- Unscrew nuts -arrows- and take out air spring strut.



Note

*When removing air spring strut, take care not to damage protective boots on steering, drive shaft and air spring strut.*

Refer to ➤ [page 80](#) if air spring strut is to be renewed.

Installing



NOTICE

Before air spring strut is installed or re-installed, it must be sealed at top cable guide to prevent water entering.

This applies when re-installing an air spring strut that was fitted previously and when installing a new air spring strut.

- Before installing, seal air spring strut at cable guide to prevent water entering.



Note

*This applies when re-installing an air spring strut that was fitted previously and when installing a new air spring strut.*

- Clean air spring strut at cable guide using commercially available cleaning solution.



Note

*Do not use substances that contain oil for cleaning.*

- Cut sealing cord (⇒ Electronic parts catalogue ) to 30 mm.
- Press cut sealing cord into cable guide on top of air spring strut inside area measuring 30 mm -arrows-.



Note

- ♦ *The area measuring 30 mm -arrows- must be covered fully by the sealing cord.*
- ♦ *The cut sealing cord must be flush with the inner contour edge of the plastic ring.*

- Press sealing cord flat slightly.

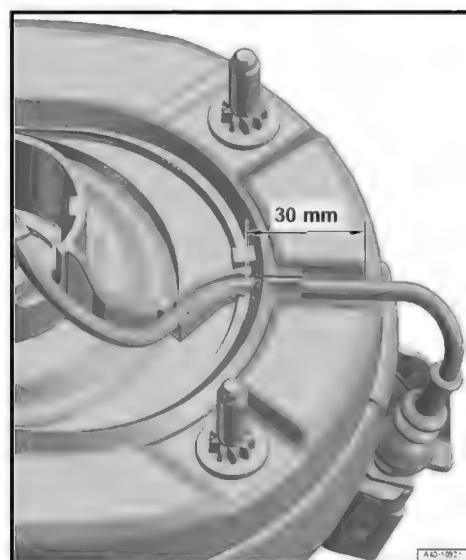
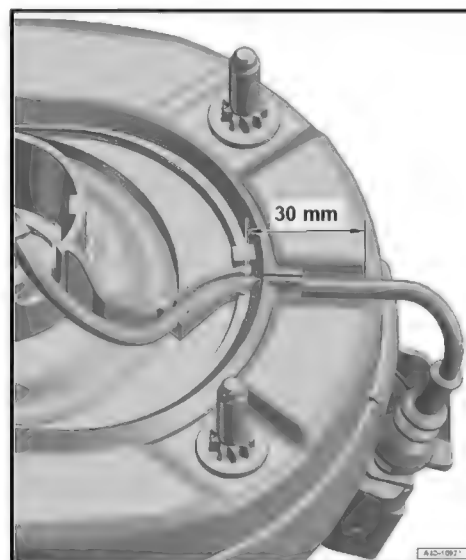
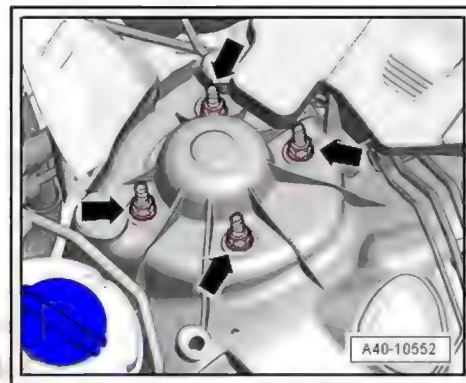
The remaining installation steps are carried out in the reverse sequence. Note the following:



Note

*Take care to prevent indentations forming in boot on air spring strut during assembly work.*

- Start by attaching air spring strut to body.

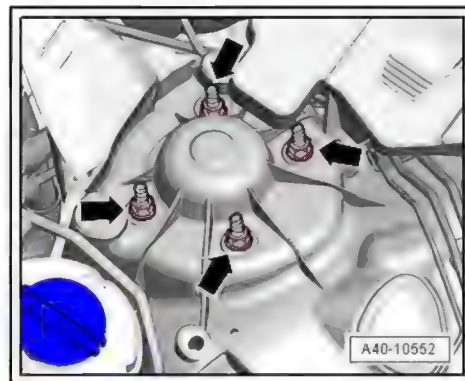




- Tighten new nuts -arrows- in diagonal sequence.
- Fit wheel ⇒ [page 329](#) .
- Charge air spring system ⇒ [page 284](#) .
- Re-adapt reference position ⇒ [page 283](#) .

#### Tightening torques

- ◆ ⇒ ["3.1 Exploded view - suspension strut, upper links", page 57](#)
- ◆ ⇒ ["4.1 Exploded view - lower suspension links, swivel joint", page 89](#)



### 3.3 Servicing suspension strut

⇒ ["3.3.1 Servicing suspension strut \(coil spring/shock absorber\)", page 66](#)

⇒ ["3.3.2 Servicing suspension strut \(air spring strut\)", page 70](#)

#### 3.3.1 Servicing suspension strut (coil spring/shock absorber)

##### Special tools and workshop equipment required

- ◆ Suspension strut tensioner - V.A.G 1752- with spring retainer - V.A.G 1752/6-



- ◆ Torque wrench - V.A.G 1332-



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◆ Shock absorber tool set - T10001-



Exploded view

1 - Nut

- 50 Nm
- Always renew if removed

2 - Shock absorber mounting

3 - Washer

4 - Top spring plate with spring seat

5 - Coil spring

- Steel coil spring or GFRP coil spring, depending on model. For allocation refer to ⇒ Electronic parts catalogue

6 - Auxiliary spring

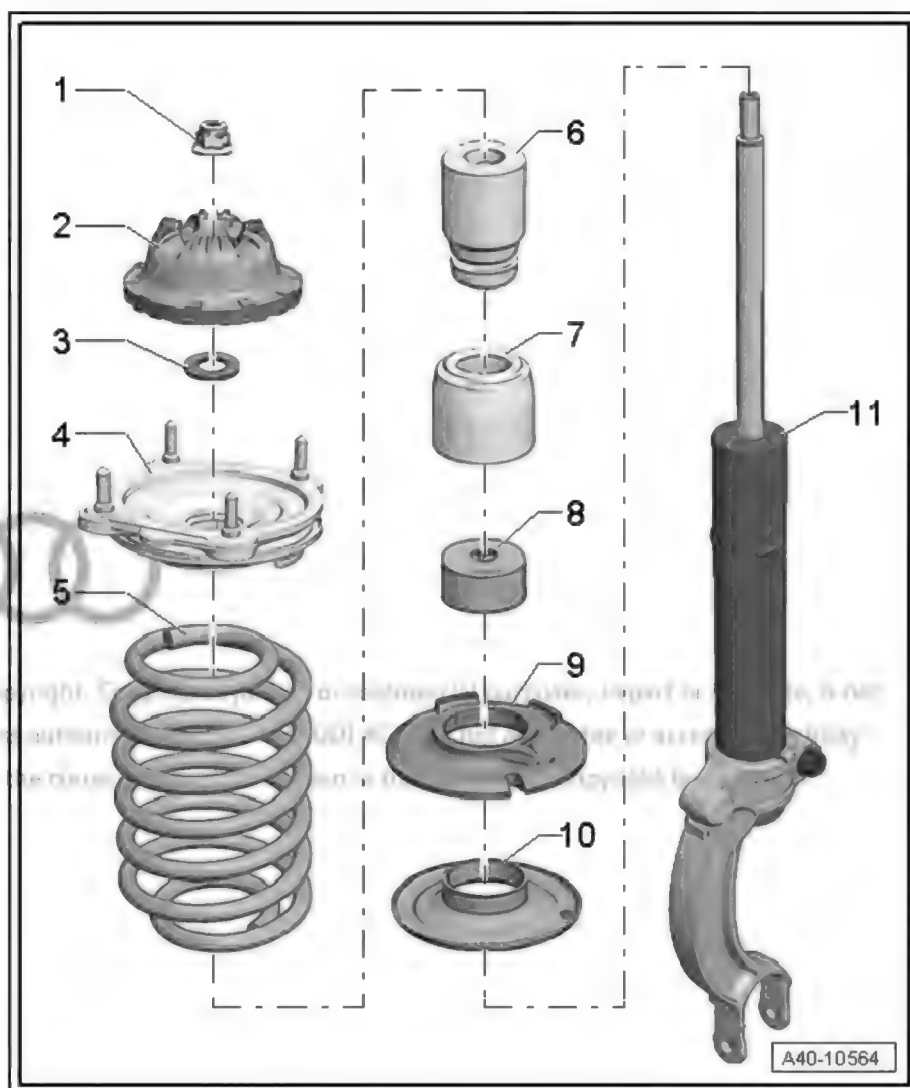
7 - Protective sleeve

8 - Protective cap

9 - Bottom spring seat

10 - Bottom spring plate

11 - Shock absorber

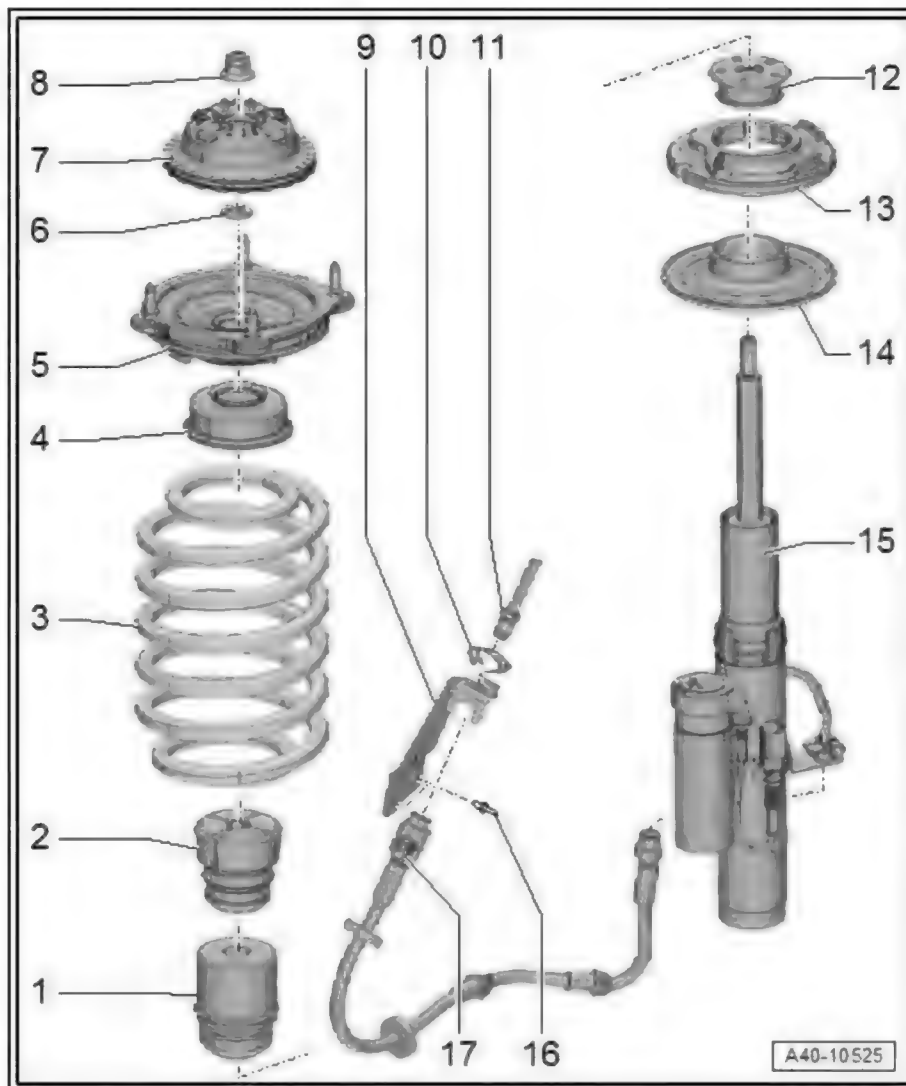


Shock absorber with DRC system





- 1 - Protective sleeve
- 2 - Bump stop
- 3 - Coil spring
- 4 - Support
- 5 - Top spring plate with spring seat
- 6 - Washer
- 7 - Shock absorber mounting
- 8 - Nut
  - ☐ 50 Nm
  - ☐ Always renew if re-moved
- 9 - Bracket
- 10 - Retaining spring
  - ☐ Renew if damaged
- 11 - Union screw
  - ☐ 14 Nm
- 12 - Protective cap
- 13 - Bottom spring seat
- 14 - Bottom spring plate
- 15 - Shock absorber
  - ☐ For DRC system
- 16 - Rivet
- 17 - Drain/charge valve with hose
  - ☐ Install so that it is free of tension



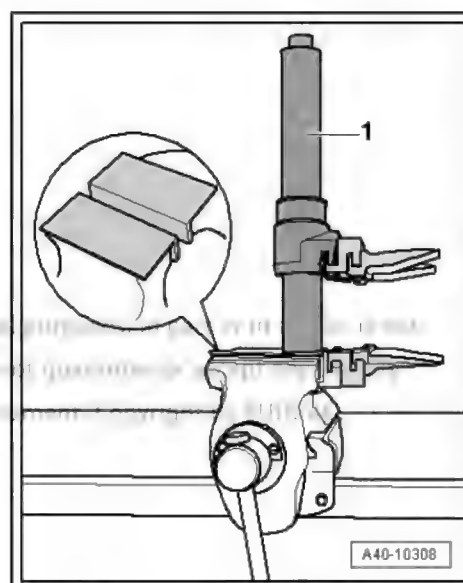
#### Removing coil spring

- Clamp spring compressor - V.A.G 1752/1- -1- in vice.



#### Note

*Use protective jaw covers to avoid damaging the spring compressor - V.A.G 1752/1-.*

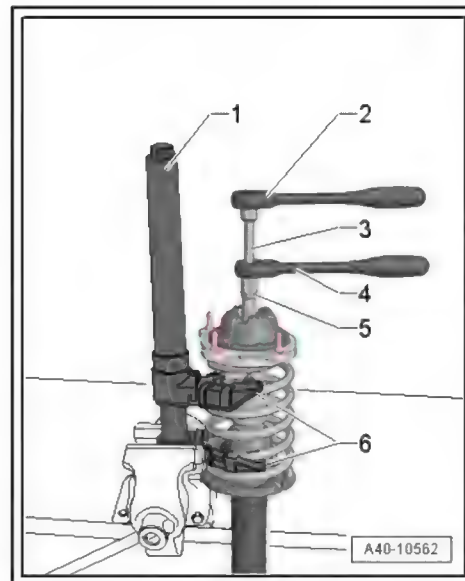






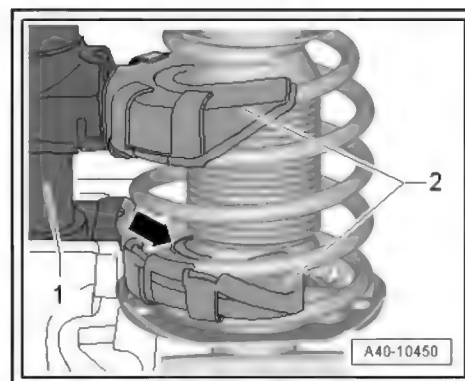
- Clamp coil spring/shock absorber in spring compressor - V.A.G 1752/1- as shown in illustration.
- Compress coil spring using spring compressor - V.A.G 1752/1- -1- until top spring plate with spring seat is free.
- Unscrew nut from piston rod.
- Take off suspension strut components and coil spring together with spring compressor - V.A.G 1752/1- .

- 1 - Spring compressor - V.A.G 1752/1-
- 2 - Ratchet, commercially available
- 3 - -T10001/7-
- 4 - -T10001/11-
- 5 - -T10001/3-
- 6 - Spring retainer - V.A.G 1752/6-



- Ensure that coil spring is correctly seated in spring retainer - V.A.G 1752/6- -arrow-.

- 1 - Spring compressor - V.A.G 1752/1-
- 2 - Spring retainer - V.A.G 1752/6-

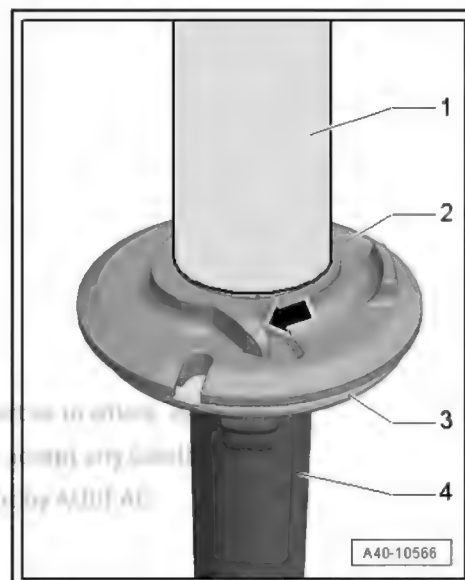


#### Renewing shock absorber

- Take off protective cap -1- and bottom spring seat -2-.
- Knock spring plate -3- loose using plastic-headed hammer and lift off.
- Using plastic-headed hammer, knock spring plate -3- onto new shock absorber -4-.



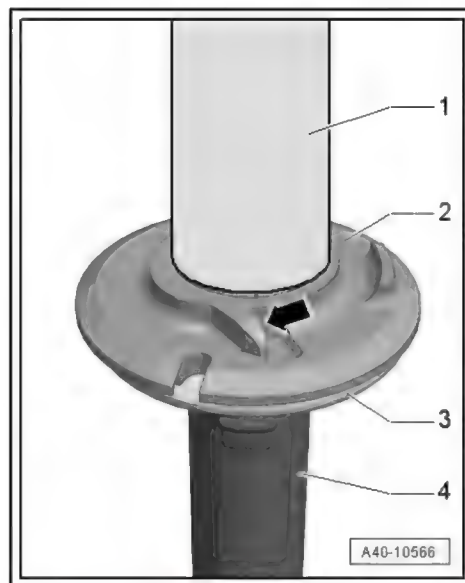
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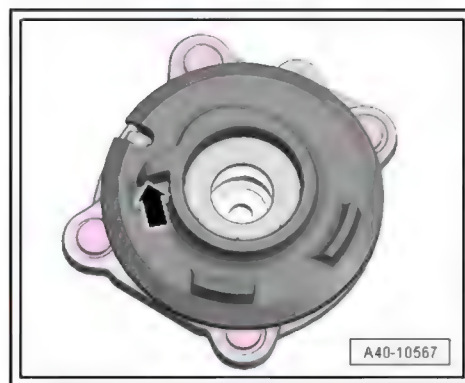


### Installing coil spring

- Install bottom spring seat and protective cap.
- Position compressed coil spring on bottom spring seat. End of spring coil must make contact with stop -arrow- (maximum permissible clearance 2 mm).
- Fit component parts of suspension strut.



- Install top spring plate with spring seat on compressed coil spring so that spring seat makes contact with end of spring coil -arrow- (maximum permissible clearance 2 mm).
- Fit shock absorber mounting.
- Tighten new nut using special tools ➔ [Item 1 \(page 67\)](#) .
- Slacken and remove spring compressor - V.A.G 1752/1- .



#### Note

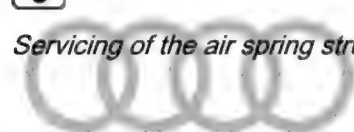
*When slackening the spring compressor, make sure that the ends of the spring remain in contact with the stops on the spring seats in the upper and lower spring plates.*

### 3.3.2 Servicing suspension strut (air spring strut)



#### Note

*Servicing of the air spring strut is currently limited to replacement of the dust boot and cleaning the piston.*



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#### 1 - Hose clip

- ☐ Before dismantling, mark installation position of fastening lug and retaining clips on air spring strut
- ☐ Always renew if removed
- ☐ Tightening ➔ [page 74](#)

#### 2 - Boot

- ☐ Must not be kinked, eliminate indentations by hand if necessary
- ☐ Slide top over shoulder of suspension strut housing

#### 3 - Piston for U-bellows

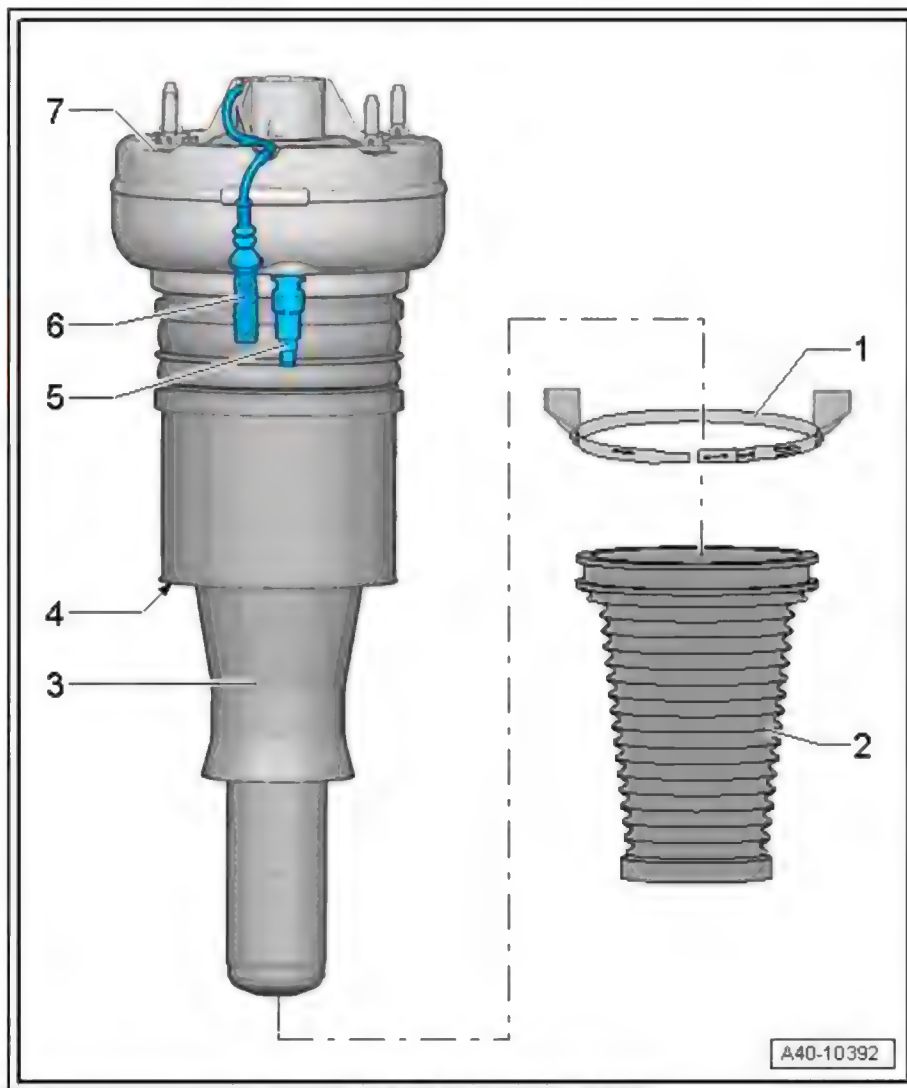
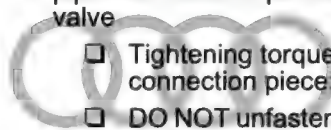
- ☐ Clean if dirty
- ☐ Visual inspection ➔ [page 73](#)

#### 4 - Rubber boot

- ☐ Surface must be regular and even.
- ☐ Visual inspection ➔ [page 73](#)

#### 5 - Connection piece for air pipe with residual pressure valve

- ☐ Tightening torque for connection piece: 3 Nm
- ☐ DO NOT unfasten residual pressure valve, as this would damage air spring strut



A40-10392

#### 6 - Electrical wire

- ☐ Leading to front left shock absorber damping adjustment valve - N336- or front right shock absorber damping adjustment valve - N337-

#### 7 - Air spring strut

- ☐ Complete air spring strut assembly must be renewed if front left - N336- or front right - N337- shock absorber damping adjustment valve is defective

#### Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1410-

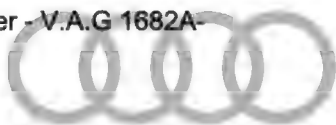
#### V.A.G 1410



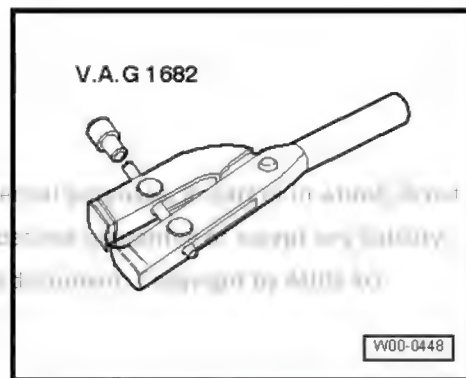
W00-11174



◆ Clamp tensioner - V.A.G 1682A-



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◆ Tensioning strap - T10038-



Removing



Note

*The boot can be renewed without removing the air spring strut.*

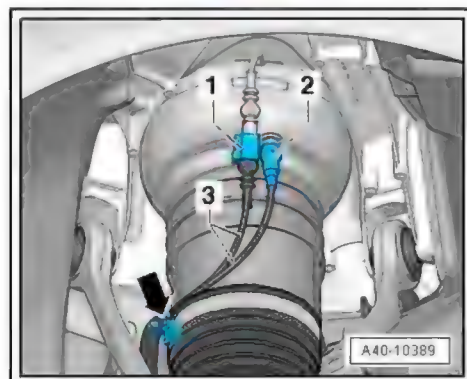
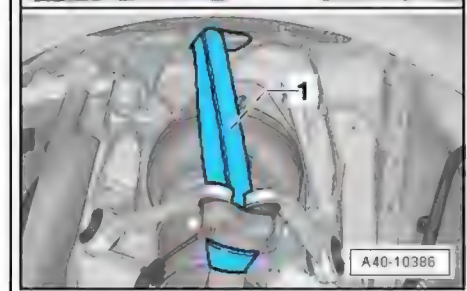
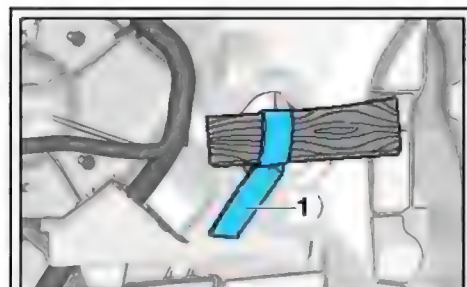
- Tie up wheel bearing housing with tensioning strap - T10038-1-, as shown in illustration.



Note

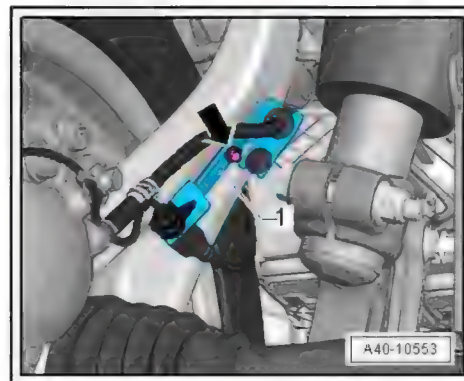
*Wheel bearing housing must be supported to avoid damaging joints of upper links.*

- Remove shock absorber fork ➔ [page 82](#) .
- Unclip wiring from retainer -arrow- and move wiring clear.

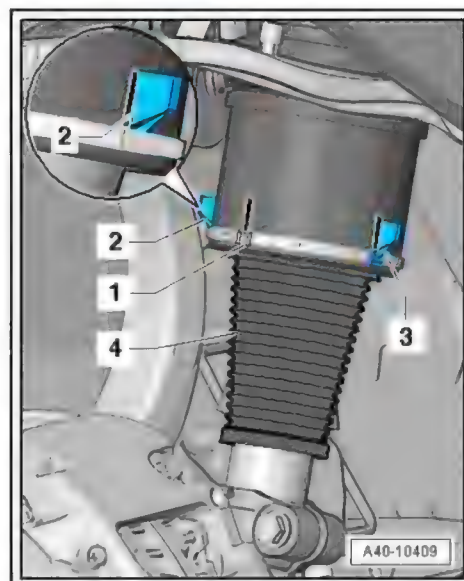




- Remove bolt -arrow- and detach bracket -1- for brake line and electrical wiring from wheel bearing housing.



- Mark installation position of fastening lug -1- and retainers -2- and -3- using a felt-tip pen or similar.
- Detach hose clip -1-.
- Carefully pull dust boot -4- downwards off collar on suspension strut housing (at top end) and collar of piston for U-bellows (at bottom end) and remove boot from air spring strut.



#### Visual inspection



#### Note

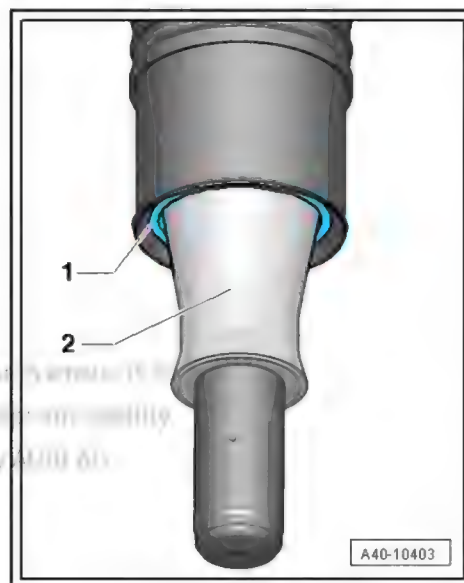
*Before fitting the dust boot, check the surface of the piston for U-bellows and the rubber boot for damage and dirt, and rectify if necessary.*

- Check rubber boot -1- for damage. Surface must be regular and even.
- Replace air spring strut if damaged.
- Check piston for U-bellows -2- for damage and dirt; re-work surface with fine sandpaper if necessary. Take care to avoid scoring and scratches.

#### Installing

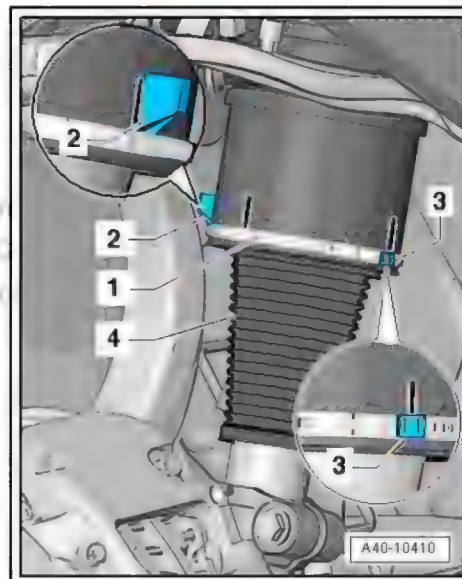
Install in reverse sequence, paying attention to the following:

- Carefully slide new dust boot over shoulder of piston for U-bellows (at bottom end).
- Install shock absorber fork ➔ [page 82](#) .
- Raise suspension to reference position ➔ [page 15](#) .



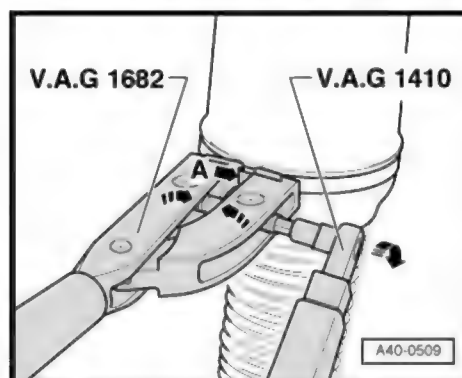


- Slide dust boot -4- over collar onto suspension strut housing (at top end).
- Fit wiring retainer (front) -2- onto hose clip -1-.
- Install hose clip -1-, but do not tighten.
- With only one wiring retainer fitted, position hose clip -1- so that fastening lug -3- is aligned with marking made earlier for wiring retainer (rear).
- Align wiring retainer (front) with marking made earlier.
- Before tightening hose clips ensure that boot is not twisted; straighten boot if necessary.
- Use hose clip pliers - V.A.G 1682- to tighten hose clip.



#### Tightening hose clip on air spring strut

- Apply clamp tensioner - V.A.G 1682- as shown. Make sure tips of tool are applied centrally -arrow A- to clip.
- Tighten hose clip by turning spindle with torque wrench (take care to keep clamp tensioner straight).
- ◆ Tightening torque: 8 Nm
- ◆ Use torque wrench with 4...20 Nm adjustment range (e.g. - V.A.G 1410- ).
- ◆ Make sure thread of spindle on tool -A- turns freely. Lubricate with MoS<sub>2</sub> grease if necessary.
- ◆ If the thread is stiff (e.g. due to dirt), the required clamping force will not be attained at the hose clip when the specified tightening torque is applied.
- Tighten loosened bolt connections.



### 3.4 Removing and installing upper links

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



- ◆ Ring spanner insert AF 16 - V.A.G 1331/12-

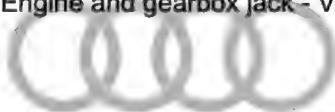




◆ Torque wrench - V.A.G 1332-



◆ Engine and gearbox jack - VAS 6931-



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◆ Support - T10149-



◆ For vehicles with air suspension: vehicle diagnostic tester

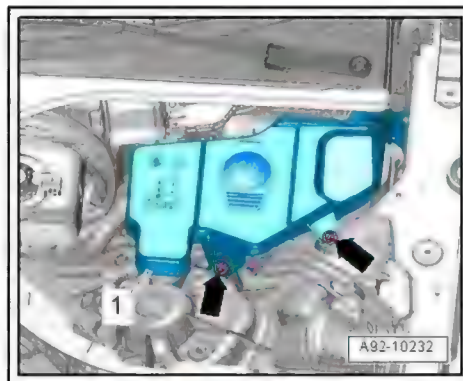
Removing

- Before starting work, measure distance from centre of wheel to lower edge of wheel housing  
⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#) or  
⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#) .
- Position vehicle on lifting platform ⇒ [page 18](#) .
- Remove body brace ⇒ [page 87](#) .





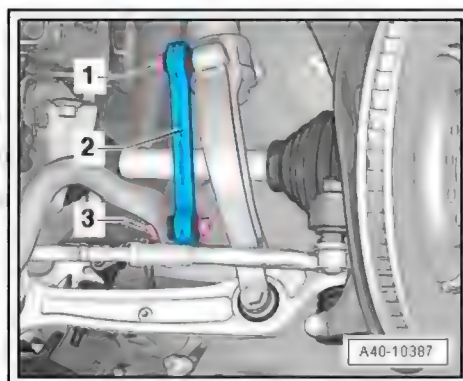
- Unscrew bolts -arrows- and push washer fluid reservoir -1- slightly to one side.
- Remove wheel ➔ [page 329](#) .
- Secure brake disc with one wheel bolt.



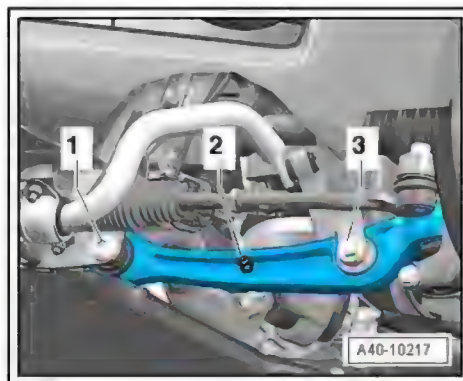
- Remove bolt -1-.



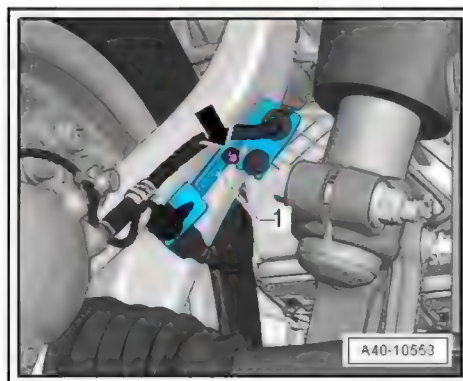
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- Remove bolt -3-.



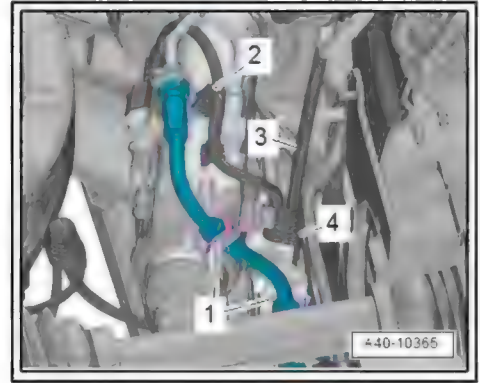
- Detach brake line and electrical wiring from bracket on wheel bearing housing.
- Turn wheel hub until one of the wheel bolt holes is at the top.





## Audi RS 6

- Detach retaining clip -1- and move clear hose for DRC system.
- Move clear brake hose -3- and electrical wiring -2 and 4-.



## All vehicles

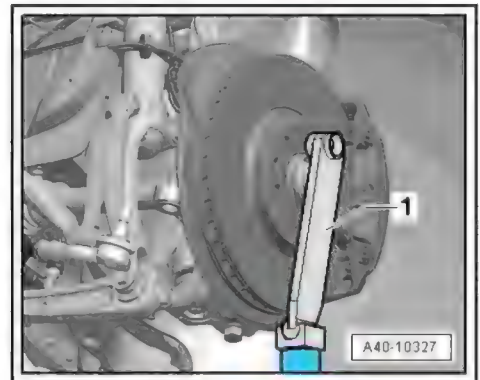
- Attach support - T10149- -1- to wheel hub using wheel bolt.
- Support wheel bearing housing using support - T10149- with engine and gearbox jack - V.A.G 1383 A- .



### NOTICE

Do not raise or lower the vehicle while the engine and gearbox jack is under the vehicle.

Do not leave the engine and gearbox jack under the vehicle for longer than necessary.



- Unscrew bolted connection -1-.



### Note

*Do not attempt to enlarge slots in wheel bearing housing using a chisel or similar.*

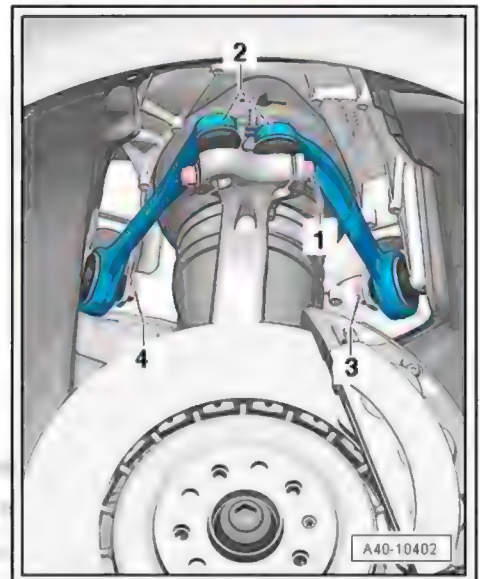
- Take both joint pins of upper links -2- out of wheel bearing housing.



### Note

*Lower wheel bearing housing only as far as necessary.*

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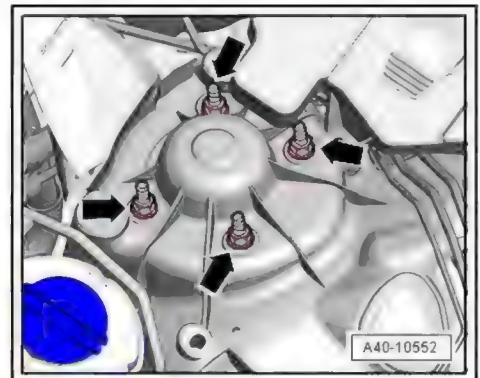


- Unscrew nuts -arrows- and swivel air spring strut or coil spring/shock absorber down and outwards out of suspension turret.
- Leave air spring strut or coil spring/shock absorber in vehicle.



### Note

*Take care not to damage any part of the vehicle.*







- Remove bolts -4- and -3- and detach upper link (front) and upper link (rear).

#### Installing

Installation is carried out in reverse sequence. Note the following:



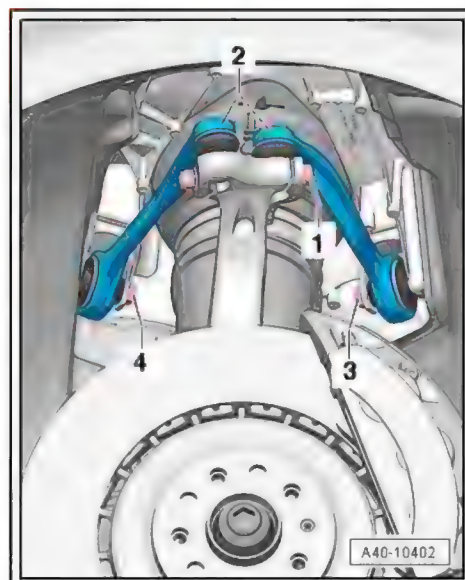
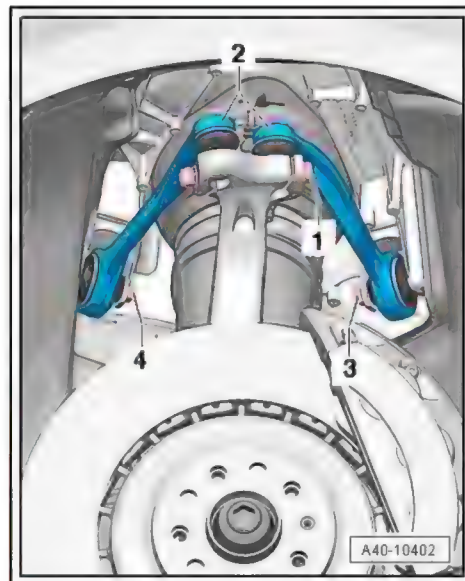
#### Note

*Bonded rubber bushes can only be turned to a limited extent. The suspension mountings must therefore only be tightened when the suspension is in the unladen position or reference position*

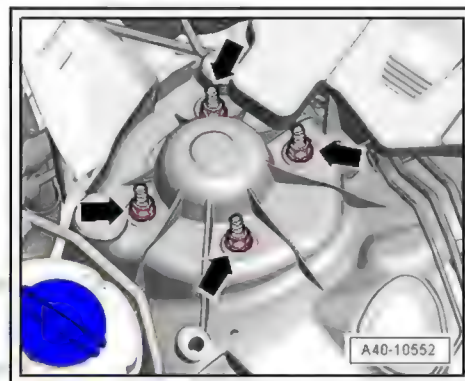
⇒ *"3.15 Lifting suspension to reference position (vehicles with air suspension)", page 15 or*

⇒ *"3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12 .*

- Fit upper links -2-, insert bolts -4- and -3- and tighten hand-tight.
- Fit both joint pins of upper links -2- into wheel bearing housing and insert bolt -1-.



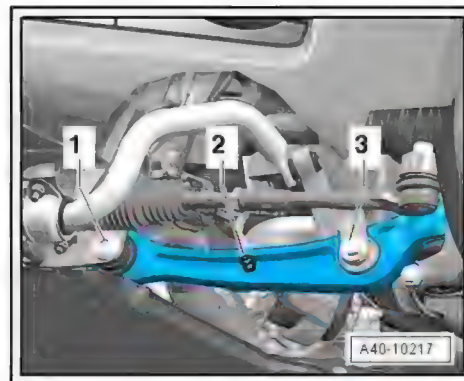
- Insert air spring strut or coil spring/shock absorber into suspension turret and tighten nuts -arrows- in diagonal sequence.



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- Refit bolt connection -3-, but do not tighten yet.



- Tighten bolted connection -1-.



Note

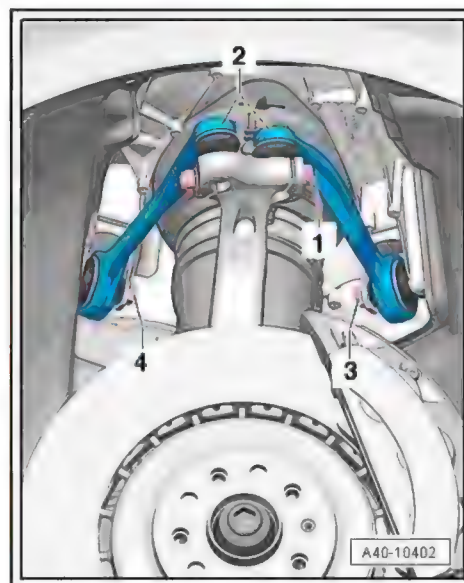
*Press down upper links as far as possible while tightening nut.*

- Raise suspension to reference position  
⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#) or  
⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#).



Note

*When tightening bolts -3- and -4-, upper links must be pressed towards inside of vehicle.*



- Tighten bolts -4- and -3-.
- Tighten remaining bolts.
- Fit wheel ⇒ [page 329](#).
- Set down vehicle on its wheels ⇒ [page 18](#).
- Check and adjust wheel alignment as required, see chart ⇒ [page 344](#).

Tightening torques

- ◆ ⇒ ["3.1 Exploded view - suspension strut, upper links", page 57](#)

### 3.5 Renewing bush for upper link

Special tools and workshop equipment required

- ◆ Assembly tool - 3301-







◆ Assembly tool - 3348-



Procedure

- Upper suspension link removed ⇒ [page 74](#) .

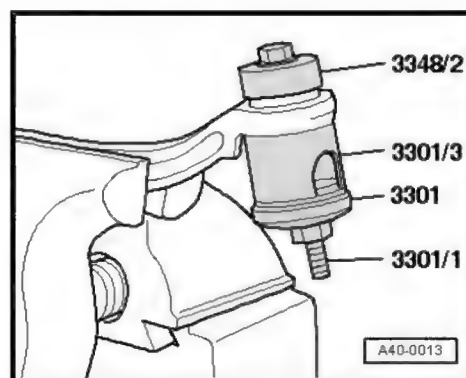
Extracting bonded rubber bush



Note

*Always use soft jaws when clamping suspension links in a vice.*

- Set up special tools as shown in illustration.
- Extract bonded rubber bush by turning nut.



Installing bonded rubber bush

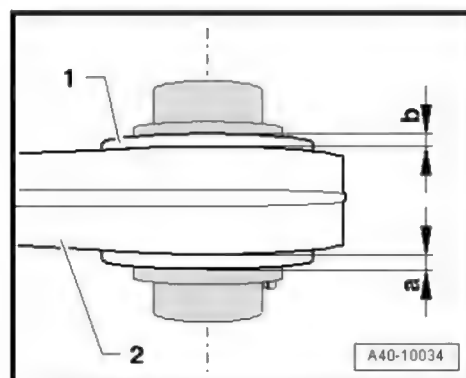
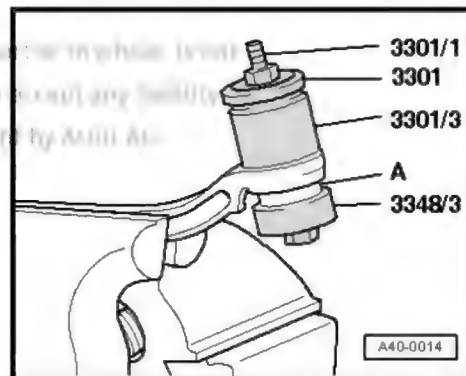


Note

*Do not use lubricant.*

A = Bush

- Set up special tools as shown in illustration.
- Pull in bonded rubber bush as far as the stop.
- Check installation depth of bonded rubber bush -1- in suspension link -2-.
- Dimensions -a- and -b- must be the same.
- Pull bush in further if dimensions -a- and -b- are not equal.
- Install upper link ⇒ [page 74](#) .



### 3.6 Charging suspension strut



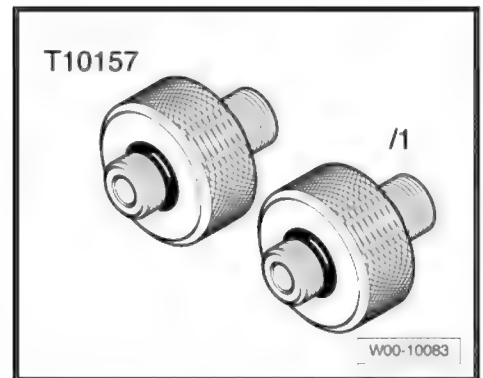
Note

*This procedure relates to the air spring strut.*

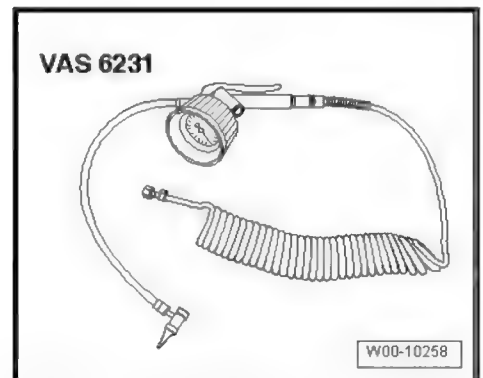


Special tools and workshop equipment required

◆ Adapters - T10157-



◆ Filler unit for air suspension strut - VAS 6231-



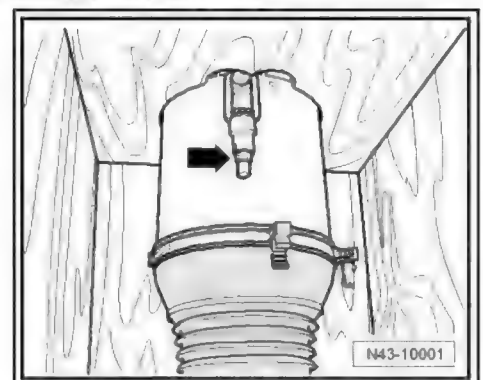
◆ Gas cylinder: Argon or Corgon



Note

*Replacement air spring struts are supplied with a minimum gas filling. After a period of storage, they may lose some of this initial pressure (in the same way as a tyre). The minimum pressure must therefore be checked, and if necessary »recharged« to the required level before the air spring struts are taken out of their packaging. If the strut is taken out of its packaging without checking and recharging the pressure, this can cause indentations or kinks to form in the U-bellows before it reaches its normal shape. This can damage the bellows and cause premature failure of the air spring strut.*

- Remove cover from packaging.
- Remove union screw -arrow- from residual pressure valve.
- Close valve on gas cylinder.
- Make sure that you are familiar with the relevant safety instructions for the use of pressurised containers and industrial gases.





- Connect filler unit for air suspension strut - VAS 6231- and adapter - T10157- as illustrated.

- 1 - Air spring strut in its packaging
- 2 - Gas cylinder for argon or Corgon with fittings
- 3 - Filler unit for air suspension strut - VAS 6231-
- 4 - Adapter - T10157-



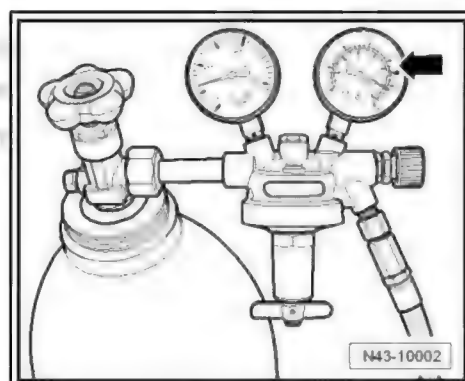
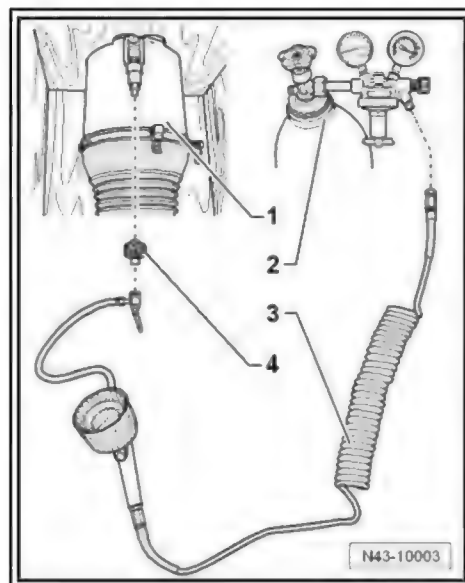
#### Note

To stop "unfiltered" air entering the air spring system, the suspension strut (air suspension) may only be »recharged« with the gases listed above.



- Set restrictor valve to 2.0 ltr./min -arrow-.

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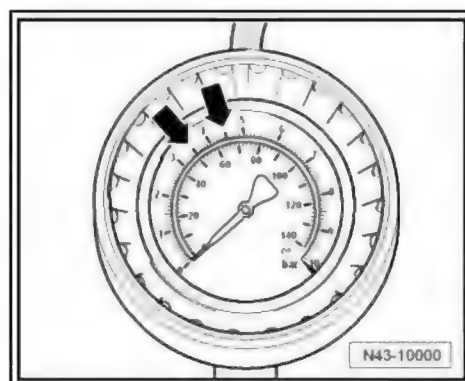
- Now charge the air spring strut with gas up to approx. 5.0 bar, using several separate bursts of pressure.
- Disconnect filler unit for air suspension strut - VAS 6231- from adapter - T10157- ; gas pressure in excess of 3.5 bar will then be released.

The minimum pressure has now been restored. You can take the air spring strut out of the packaging.

- After installation, set the suspension to the raised level setting and then back to the normal level. Repeat this procedure once more.

Most of the gas will be replaced with the filtered air from the air supply unit once the suspension has twice moved up and down to these settings.

- Install air spring strut ⇒ [page 65](#) .



### 3.7 Removing and installing shock absorber fork

Special tools and workshop equipment required

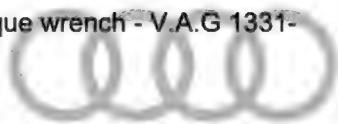




◆ Spreader - 3424-



◆ Torque wrench - V.A.G 1331-



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◆ Torque wrench - V.A.G 1332-

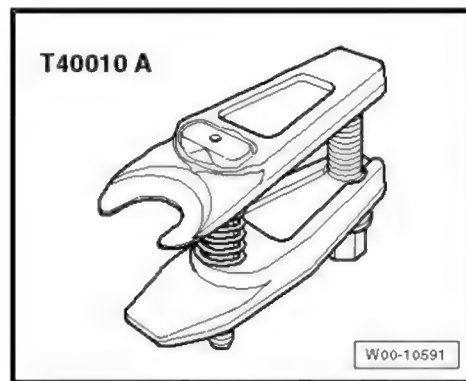


◆ Tensioning strap - T10038-





◆ Ball joint puller - T40010 A-



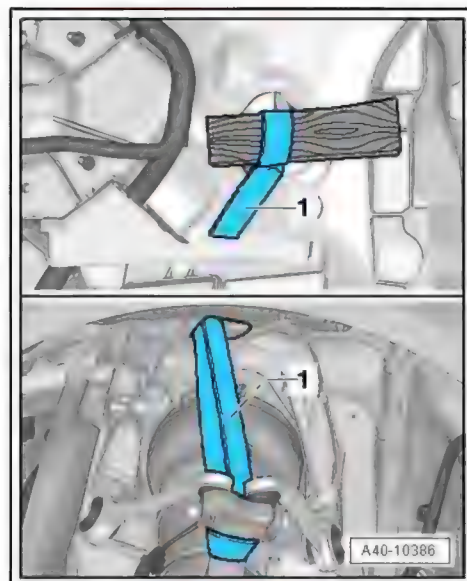
Removing

- Before starting work, measure distance from centre of wheel to lower edge of wheel housing  
⇒ [“3.14 Lifting suspension to unladen position - vehicles with coil springs”, page 12](#) or  
⇒ [“3.15 Lifting suspension to reference position \(vehicles with air suspension\)”, page 15](#) .
- Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .
- Remove wheel ⇒ [page 329](#) .
- Tie up wheel bearing housing with tensioning strap - T10038-1-, as shown in illustration.

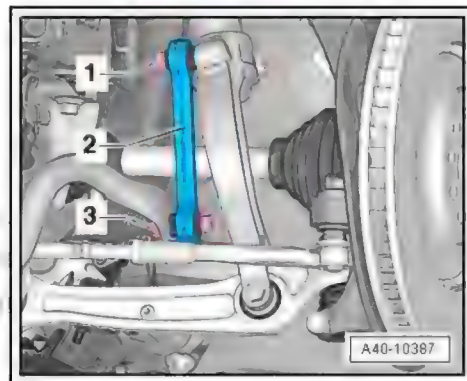


Note

*Wheel bearing housing must be supported to avoid damaging joints of upper links.*



- Detach bolted connections -1- and -3-.
- Take out coupling rod -2-.



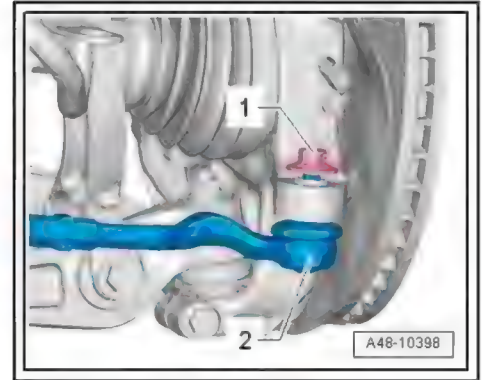


- Unscrew nut -1- on joint pin -2- of track rod ball joint until it is flush with end of thread. Counterhold if necessary when loosening.

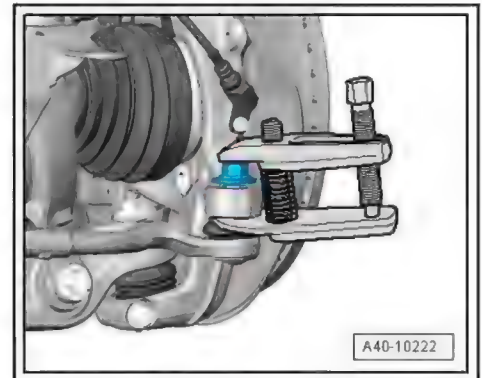


**Note**

*Leave nut screwed on a few turns to protect threads on joint pin.*



- Press track rod ball joint off wheel bearing housing using ball joint puller - T40010 A- . Then remove nut.

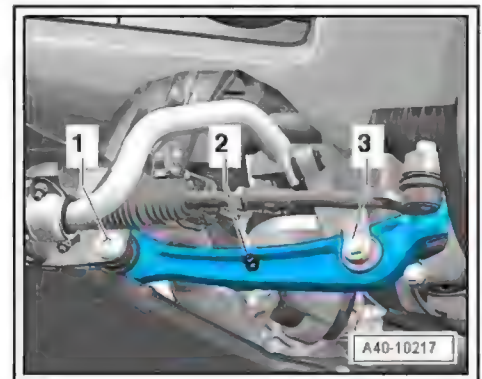


- Detach bolted connections -2 and 3-.
- Detach bolted connection -1-, guide out track control link and swivel forwards.

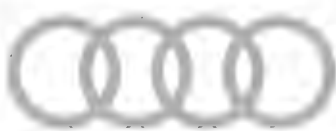
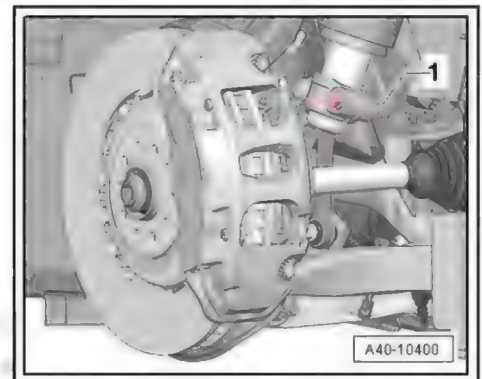


**Note**

*To remove bolt -1-, turn steering rack to full left or right lock depending on which side of the vehicle you are working on.*



- Detach bolt connection -1-.



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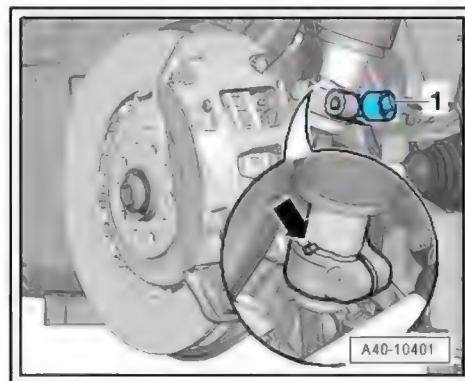
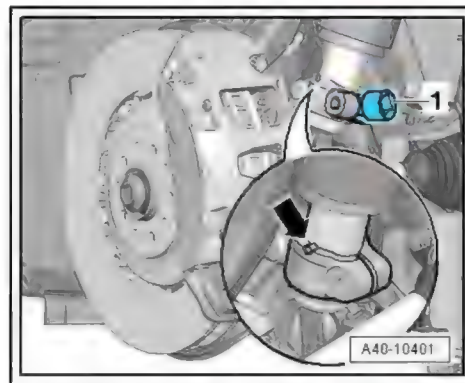




- Insert spreader - 3424- in slot in shock absorber fork.
- Turn ratchet handle through 90° and pull ratchet handle off spreader - 3424- -1-.
- Pull shock absorber fork downwards off shock absorber tube and remove.

#### Installing

Installation is carried out in reverse sequence. Note the following:



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#### Note

- ◆ *Version 1: If present, make sure that T-bolt -arrow- engages in groove of shock absorber fork when fitting.*
  - ◆ *Version 2: If present, make sure that pin -1- engages in groove -2- of shock absorber fork when fitting.*
  - ◆ *Bonded rubber bushes can only be turned to a limited extent. The suspension mountings must therefore only be tightened when the suspension is in the unladen position or reference position.*
- Raise suspension to unladen position or reference position  
⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#) or  
⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#) .
  - On vehicles with automatic headlight range control, perform basic setting of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .
  - If the vehicle level sender has been removed and refitted or the linkage detached, the reference position must be re-adapted ⇒ [page 283](#) .
  - If the reference position has been re-adapted on vehicles with lane departure warning, the camera control unit - J852- must be recalibrated ⇒ [page 365](#) .
  - Fit wheel ⇒ [page 329](#) .
  - Check and adjust wheel alignment as required, see chart  
⇒ [page 344](#) .

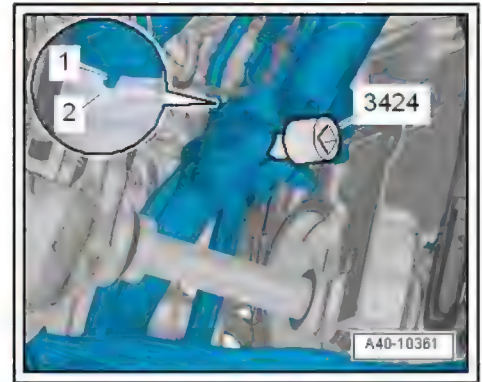
#### Tightening torques

- ◆ ⇒ ["3.1 Exploded view - suspension strut, upper links", page 57](#)
- ◆ ⇒ ["4.1 Exploded view - lower suspension links, swivel joint", page 89](#)

### 3.8 Removing and installing body brace

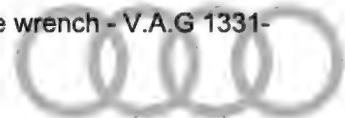
#### Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1783-





◆ Torque wrench - V.A.G 1331-



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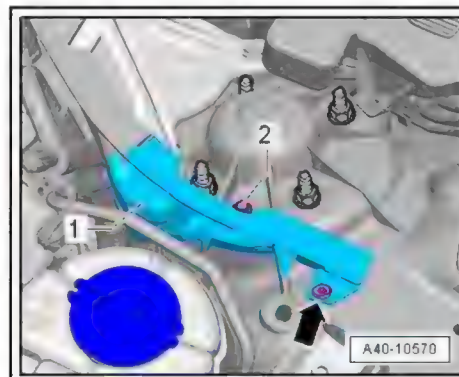
V.A.G 1331



W00-11166

Removing

- Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .
- Remove spreader rivets -arrows- on both sides, unscrew nut -2- and unclip cover -1-.



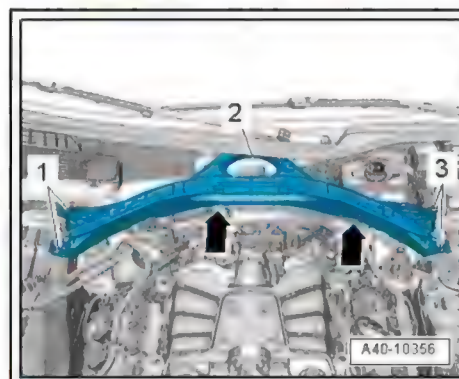
- Remove bolts -1 to 3- and -arrows- and detach body brace.

Installing

Installation is carried out in reverse sequence.

Tightening torques

- ◆ ⇒ ["3.1 Exploded view - suspension strut, upper links", page 57](#)





## 4 Lower suspension links, swivel joint

⇒ ["4.1 Exploded view - lower suspension links, swivel joint", page 89](#)

⇒ ["4.2 Removing and installing track control link", page 91](#)

⇒ ["4.3 Removing and installing guide link", page 94](#)

⇒ ["4.4 Renewing bush for track control link", page 97](#)

⇒ ["4.5 Removing and installing swivel joint", page 103](#)

⇒ ["4.6 Removing and installing bonded rubber bush for guide link", page 104](#)

### 4.1 Exploded view - lower suspension links, swivel joint

#### 1 - Bolt

- ☐ Always renew if removed

#### 2 - Guide link

- ☐ Removing and installing ⇒ [page 94](#)
- ☐ Renewing bonded rubber bush for guide link ⇒ [page 104](#)

#### 3 - Nut

- ☐ 70 Nm +180°
- ☐ Always renew if removed
- ☐ Vehicle must be in reference position when tightening  
⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#)  
or  
⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#)

#### 4 - Wheel bearing housing

#### 5 - Bolt

- ☐ 40 Nm
- ☐ Always renew if removed

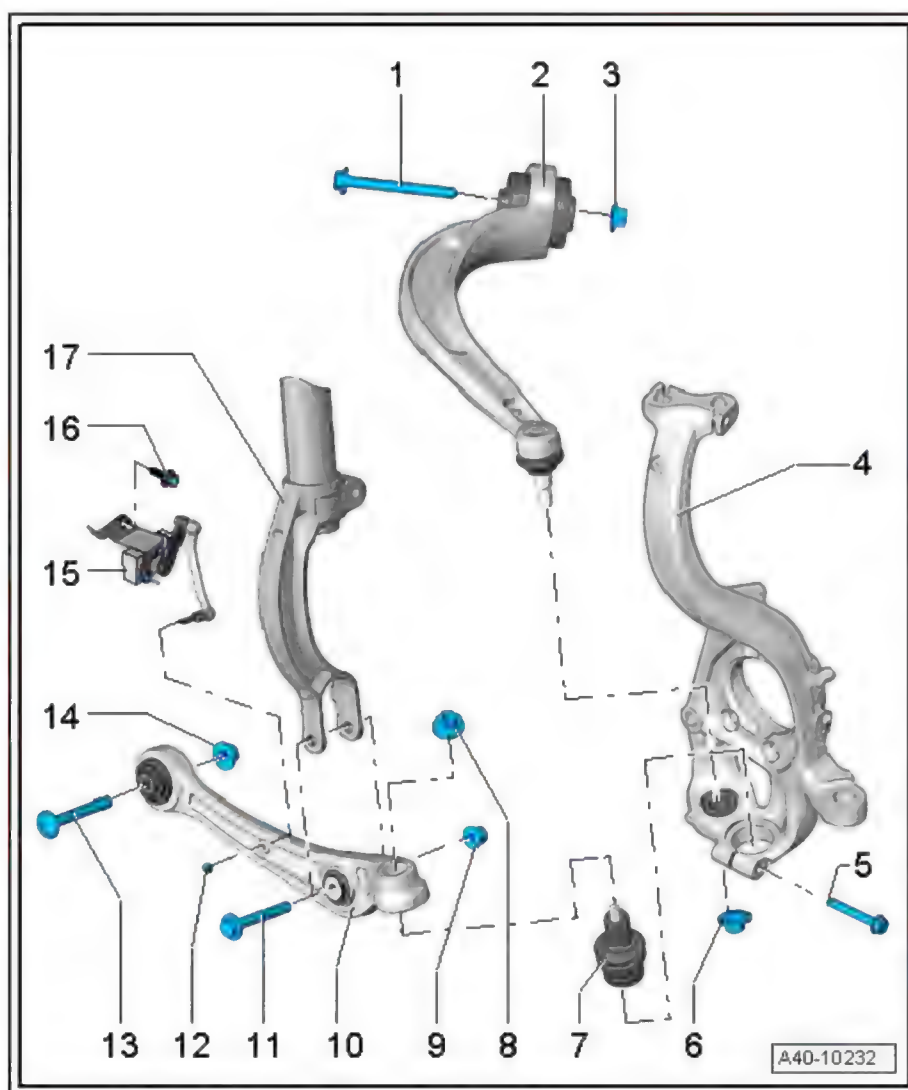
#### 6 - Nut

- ☐ 140 Nm
- ☐ Always renew if removed

- ☐ After detaching guide link from wheel bearing housing, remove residual adhesive from thread of joint pin.

#### 7 - Swivel joint

- ☐ Removing and installing ⇒ [page 103](#)
- ☐ Different versions; for correct version, refer to ⇒ Electronic parts catalogue







#### Note

- ◆ *Note installation position*  
⇒ [page 104](#) .
- ◆ *Insert swivel joint all the way onto contact surface on wheel bearing housing.*

#### 8 - Nut

- ☐ M12: 120 Nm
- ☐ M14: 140 Nm
- ☐ Different versions; for correct version, refer to ⇒ [Electronic parts catalogue](#)
- ☐ Always renew if removed
- ☐ After detaching swivel joint from wheel bearing housing, remove residual adhesive from thread of joint pin.

#### 9 - Nut

- ☐ 90 Nm +90°
- ☐ Always renew if removed
- ☐ Vehicle must be in reference position when tightening  
⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#) or  
⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#)

#### 10 - Track control link

- ☐ Removing and installing ⇒ [page 91](#)
- ☐ Different versions; for correct version, refer to ⇒ [Electronic parts catalogue](#)
- ☐ Renewing bonded rubber bush for track control link (at wheel bearing housing end) ⇒ [page 97](#)
- ☐ Renewing bonded rubber bush for track control link (at subframe end) ⇒ [page 99](#)

#### 11 - Bolt

- ☐ Always renew if removed

#### 12 - Nut

- ☐ Always renew if removed
- ☐ 9 Nm

#### 13 - Bolt

- ☐ Always renew if removed

#### 14 - Nut

- ☐ 70 Nm +180°
- ☐ Always renew if removed
- ☐ Vehicle must be in reference position when tightening  
⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#) or  
⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#)

#### 15 - Front left vehicle level sender - G78- or front right vehicle level sender - G289-

- ☐ Remove/install and renew only as a complete assembly ⇒ [page 286](#)
- ☐ Lever of sender must face towards rear
- ☐ Perform basic setting of headlights if sender mountings are loosened ⇒ [Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights](#)
- ☐ If the vehicle level sender has been removed and refitted or the linkage detached, the reference position must be re-adapted: start appropriate program on ⇒ [Vehicle diagnostic tester in \[Guided Functions\]](#).
- ☐ If the reference position has been re-adapted on vehicles with lane departure warning, the camera control unit - J852- must be recalibrated ⇒ [page 365](#) .

#### 16 - Bolt

- ☐ 9 Nm

#### 17 - Shock absorber fork





## 4.2 Removing and installing track control link

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1332-



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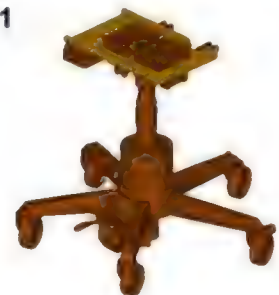
- ◆ Engine and gearbox jack - VAS 6931-

V.A.G 1332



W00-11165

VAS 6931



W00-11607

- ◆ Support - T10149-

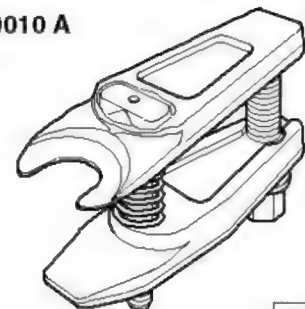
T10149



W00-11475

- ◆ Ball joint puller - T40010 A-

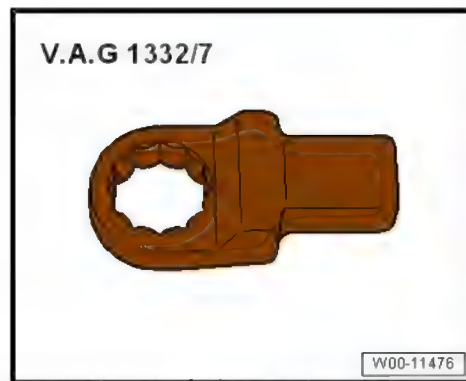
T40010 A



W00-10591



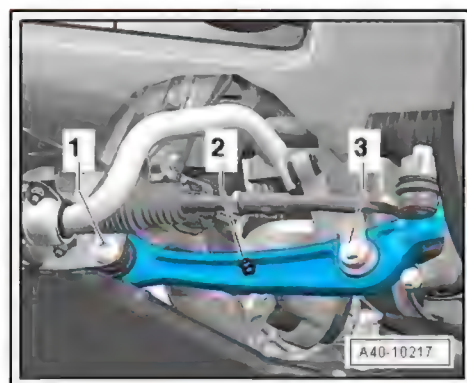
◆ Ring spanner insert - V.A.G 1332/7-



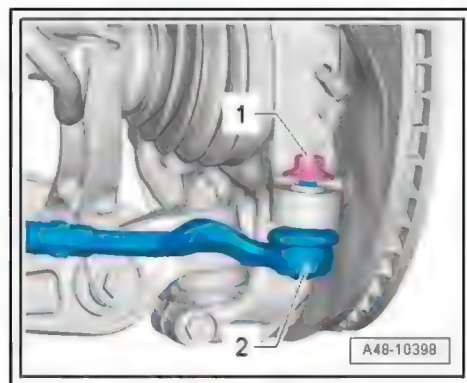
◆ For vehicles with air suspension: vehicle diagnostic tester

Removing

- Before starting work, measure distance from centre of wheel to lower edge of wheel housing  
⇒ "3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12 or  
⇒ "3.15 Lifting suspension to reference position (vehicles with air suspension)", page 15 .
- Position vehicle on lifting platform ⇒ page 18 .
- Remove wheel ⇒ page 329 .
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove nut -2-.
- Detach bolt connection -3-.



- Unscrew nut -1- on joint pin -2- of track rod ball joint until it is flush with end of thread. Counterhold if necessary when loosening.





Leave nut screwed on a few turns to protect threads on joint pin.

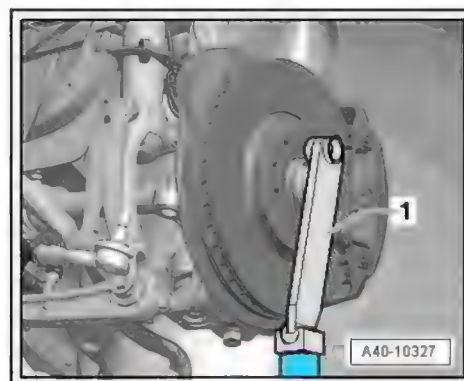
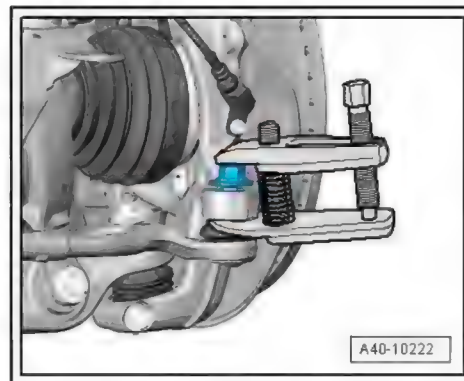
- Press track rod ball joint off wheel bearing housing using ball joint puller - T40010 A- . Then remove nut.



#### Note

*Make sure the two lever arms of the puller are parallel when maximum force is exerted; adjust as necessary.*

- To avoid damage to joints of upper links, support wheel bearing housing (e.g. using engine and gearbox jack - V.A.G 1383 A- ) to prevent the suspension from extending too far.
- Attach support - T10149- to wheel hub using wheel bolt.
- Support wheel bearing housing using support - T10149- with engine and gearbox jack - V.A.G 1383 A- .



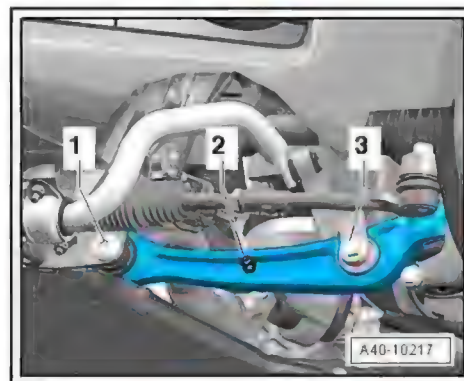
- Detach bolt connection -1-.



#### Note

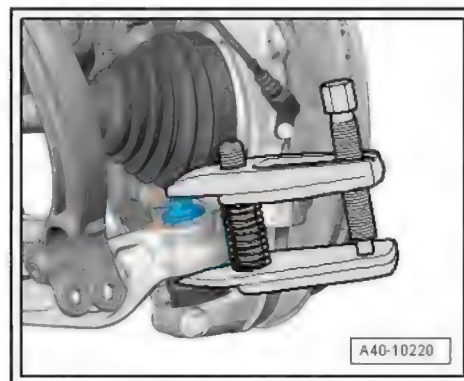
*To remove bolt -1-, turn steering rack to full left or right lock depending on which side of the vehicle you are working on.*

- Guide out track control link and swivel towards rear.
- Unscrew nut on swivel joint pin until it is flush with end of thread. Counterhold if necessary when loosening.
- Press swivel joint pin out of tapered seat using ball joint puller - T40010 A- .



#### Note

- ♦ *Make sure the two lever arms of the puller are parallel when maximum force is exerted; adjust as necessary.*
- ♦ *Take care not to damage boot.*
- ♦ *To avoid damage to joints of upper links, support wheel bearing housing (e.g. using engine and gearbox jack - V.A.G 1383 A- ) to prevent the suspension from extending too far.*



- Remove nut from joint pin of track control link.
- Take out track control link.

#### Installing

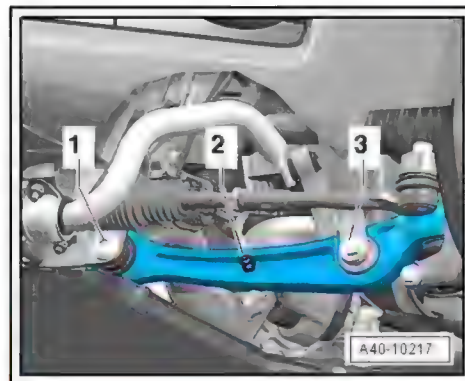
Installation is carried out in reverse sequence. Note the following:





#### Note

- ◆ *Bonded rubber bushes can only be turned to a limited extent. The suspension mountings must therefore only be tightened when the suspension is in the unladen position or reference position.*
  - ◆ *Raise suspension to reference position*  
⇒ "3.15 Lifting suspension to reference position (vehicles with air suspension)", page 15 or  
⇒ "3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12.
  - ◆ *When tightening bolted connection -1-, track control link must be pressed towards inside of vehicle.*
  - Remove remaining adhesive from thread of joint pin on swivel joint.
  - On vehicles with automatic headlight range control, perform basic setting of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .
  - From If the vehicle level sender has been removed and refitted or the linkage detached, the reference position must be re-adapted: start appropriate program on ⇒ Vehicle diagnostic tester in Guided Functions.
  - If the reference position has been re-adapted on vehicles with lane departure warning, the camera control unit - J852- must be recalibrated ⇒ page 365 .
  - Fit wheel ⇒ page 329 .
  - Check and adjust wheel alignment as required, see chart ⇒ page 344 .
- Tightening torques
- ◆ ⇒ "4.1 Exploded view - lower suspension links, swivel joint", page 89



## 4.3 Removing and installing guide link

Special tools and workshop equipment required

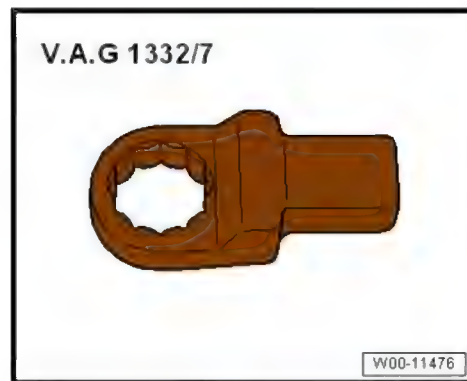
- ◆ Torque wrench - V.A.G 1332-







◆ Ring spanner insert - V.A.G 1332/7-



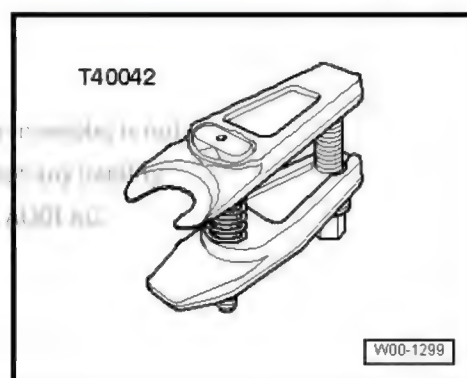
◆ Engine and gearbox jack - VAS 6931-



◆ Support - T10149-



◆ Ball joint puller - T40042-



◆ For vehicles with air suspension: vehicle diagnostic tester

Removing

- Before starting work, measure distance from centre of wheel to lower edge of wheel housing  
⇒ "3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12 or



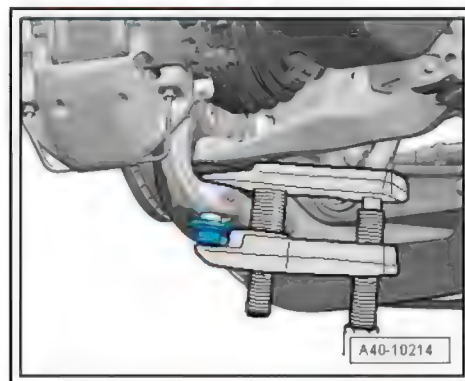
⇒ "3.15 Lifting suspension to reference position (vehicles with air suspension)", page 15 .

- Position vehicle on lifting platform ⇒ page 18 .
- Remove wheel ⇒ page 329 .
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Secure brake disc with one wheel bolt.
- Unscrew nut on joint pin of guide link until it is flush with end of thread. Counterhold joint pin if necessary.
- Press joint pin of guide link out of tapered seat using ball joint puller - T40042- .

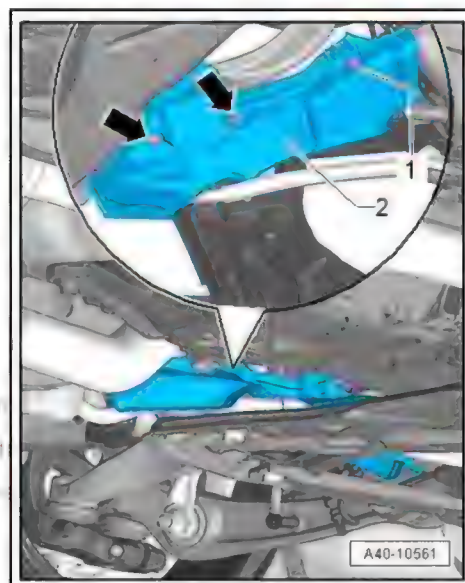


#### Note

- ◆ Take care not to damage boot.
- ◆ Make sure the two lever arms of the puller are parallel when maximum force is exerted.
- ◆ Secure ball joint puller to prevent it dropping.



- Remove heat shield -2- ⇒ page 52 .

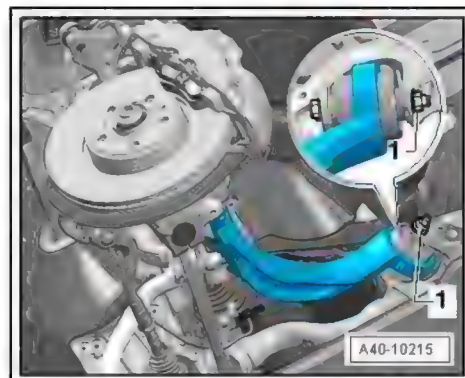


- Detach bolt connection -1-.
- Remove guide link from subframe.

#### Installing

Installation is carried out in reverse sequence. Note the following:

- If guide link is to be re-installed, remove locking fluid from thread of ball joint beforehand.
- Initially only hand-tighten bolts/nuts for components with bonded rubber bush.







#### Note

- ◆ *Bonded rubber bushes can only be turned to a limited extent. The suspension mountings must therefore only be tightened when the suspension is in the unladen position or reference position.*
- ◆ *Raise suspension to reference position*  
⇒ *"3.15 Lifting suspension to reference position (vehicles with air suspension)", page 15* or  
⇒ *"3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12*.
- ◆ *When tightening bolted connection -1-, guide link must be pressed towards inside of vehicle.*
- Fit wheel ⇒ *page 329*.
- Set down vehicle on its wheels ⇒ *page 18*.
- Check and adjust wheel alignment as required, see chart ⇒ *page 344*.

#### Tightening torques

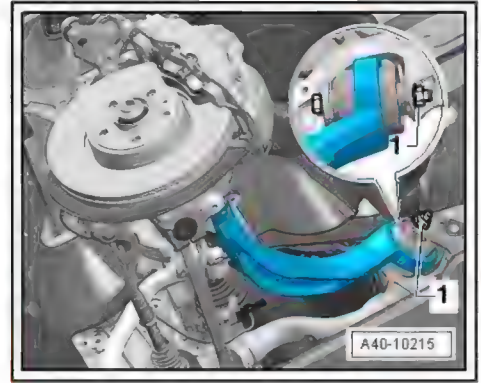
- ◆ ⇒ *"4.1 Exploded view - lower suspension links, swivel joint", page 89*
- ◆ ⇒ *"2.1 Exploded view - subframe", page 28*

### 4.4 Renewing bush for track control link

⇒ *"4.4.1 Renewing bush for track control link (wheel bearing housing end)", page 97*

⇒ *"4.4.2 Renewing bush for track control link (subframe end)", page 99*

#### 4.4.1 Renewing bush for track control link (wheel bearing housing end)

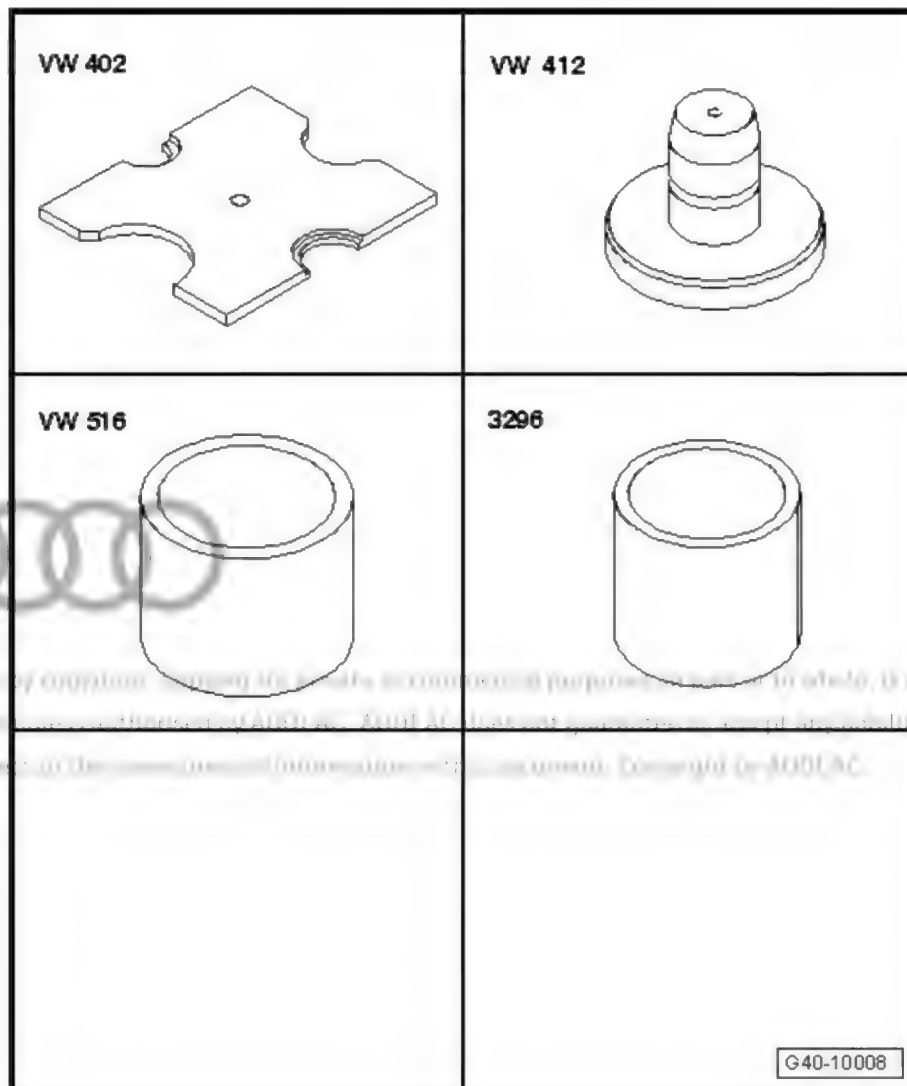


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Special tools and workshop  
equipment required



- ◆ Thrust plate - VW 402-
- ◆ Press tool - VW 412-
- ◆ Tube - VW 516-
- ◆ Tube - 3296-
- ◆ Assembly paste - G 052 109 A2-

#### Procedure

- Track control link removed ➔ [page 91](#)



#### Note

*Track control link must be held in position while bonded rubber bush is being removed or installed.*



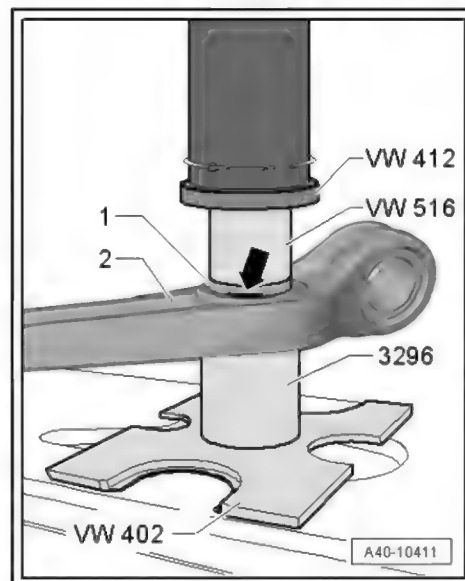


#### Pressing out bonded rubber bush

- Mark position (installation depth) of bonded rubber bush -1- on bush -arrow-.

Use a waterproof felt-tip pen or similar for marking.

- Apply special tools as shown in illustration.
- Press bonded rubber bush -1- out of track control link -2-.



#### Pressing in bonded rubber bush

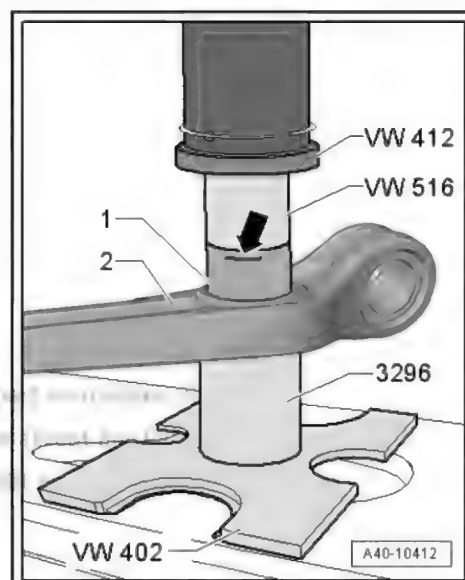
- Transfer marking for installation depth from old bonded rubber bush to new bush.
- Lightly lubricate bonded rubber bush with assembly paste - G 052 109 A2- .
- Locate bonded rubber bush -1- in track control link -2-.
- Apply special tools as shown in illustration.



Note

*Make sure bonded rubber bush remains straight while pressing in.*

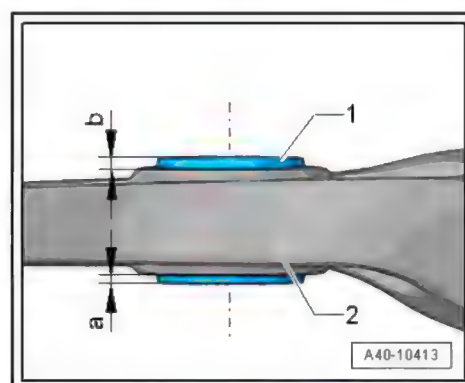
- Press bonded rubber bush -1- into track control link -2-.
- Refit to marking made before removal -arrow-.



- Check installation depth of bonded rubber bush -1- in track control link -2-.

Dimensions -a- and -b- must be equal.

- Press bonded rubber bush -1- in further if dimensions -a- and -b- are not equal.
- Install track control link ➔ [page 91](#) .

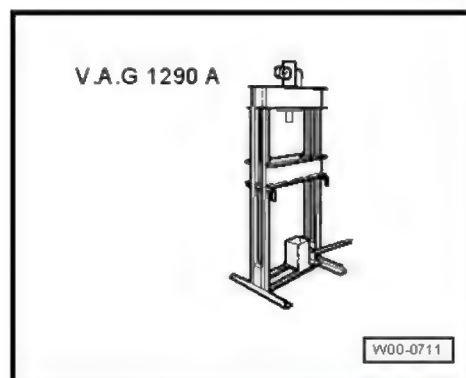


#### 4.4.2 Renewing bush for track control link (subframe end)

Special tools and workshop equipment required



◆ Workshop press - V.A.G 1290A-



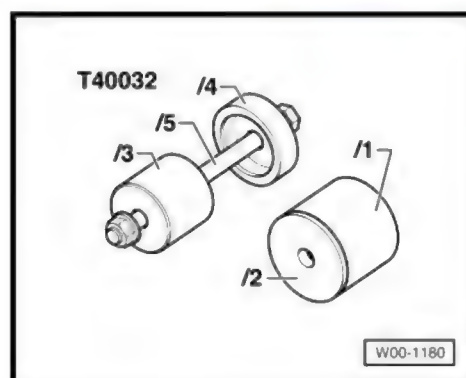
◆ Press tool - VW 407-



◆ Assembly tool - 3346-



◆ Assembly tool - T40032-







◆ Thrust plate - VW 402-



◆ Assembly paste - G 052 109 A2-

Procedure

- Track control link removed ➔ [page 91](#)

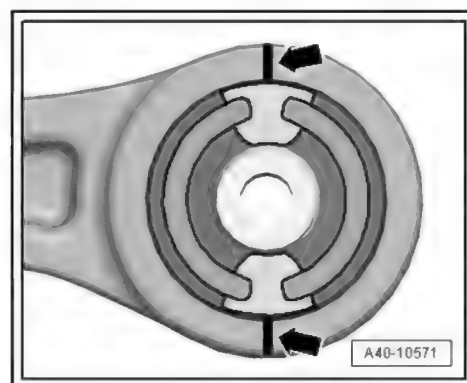


Note

*Track control link must be held in position while bonded rubber bush is being removed or installed.*

Pressing out bonded rubber bush

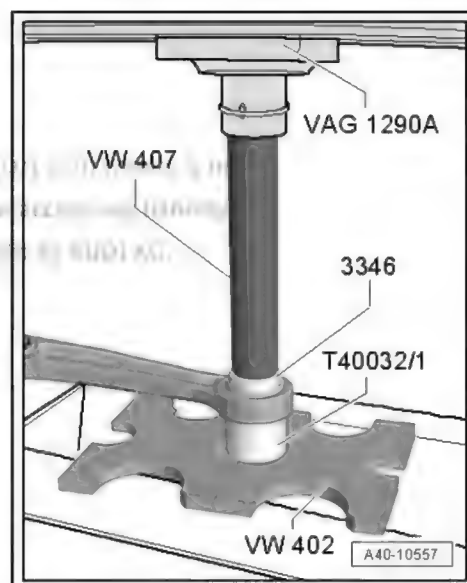
- Mark position of "kidney-shaped cavities" of bonded rubber bush on track control link -arrows-, as shown in illustration.



Use a waterproof felt-tip pen or similar for marking.

- Apply special tools as shown in illustration.
- Press bonded rubber bush out of track control link.

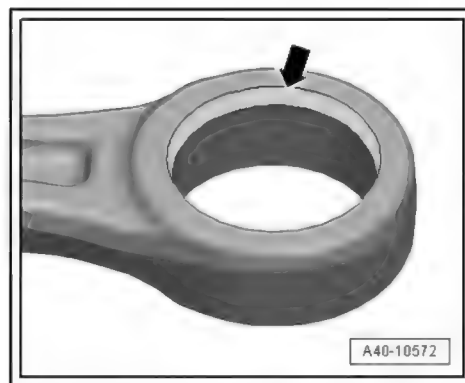
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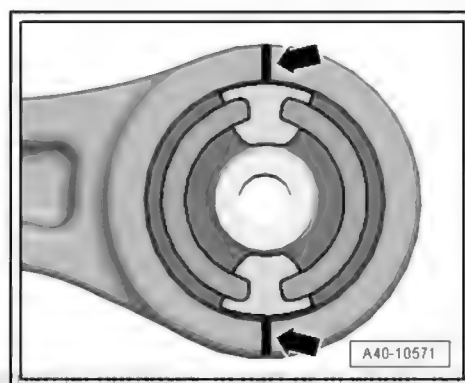


### Pressing in bonded rubber bush

- Lightly lubricate bonded rubber bush with assembly paste - G 052 109 A2- .
- Insert bonded rubber bush into track control link on side with chamfer -arrow-.



- Adjust position of "kidney-shaped cavities" with markings -arrows- on track control link made before removal.



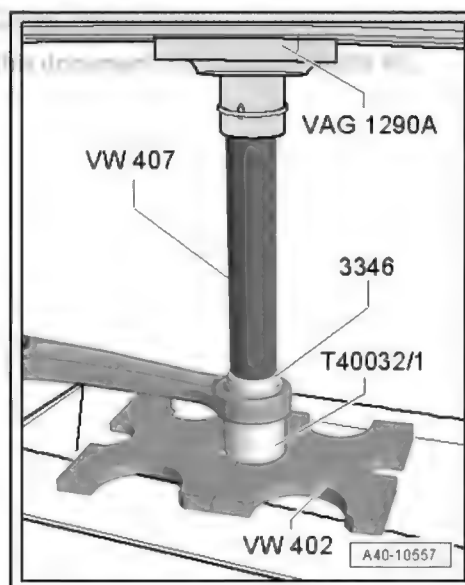
- Apply special tools as shown in illustration.



#### Note

*Make sure bonded rubber bush remains straight while pressing in.*

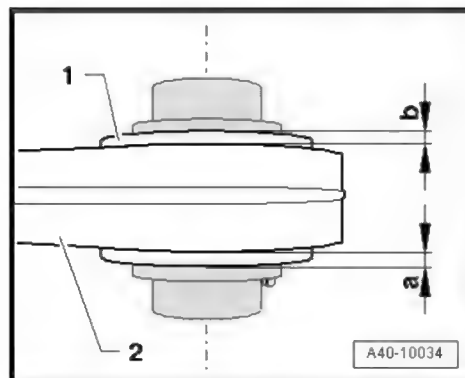
- Press bonded rubber bush into track control link.



- Check installation depth of bonded rubber bush -1- in track control link -2-.

Dimensions -a- and -b- must be equal.

- Press bonded rubber bush -1- in further if dimensions -a- and -b- are not equal.
- Install track control link ➔ [page 91](#) .







## 4.5 Removing and installing swivel joint

Special tools and workshop equipment required

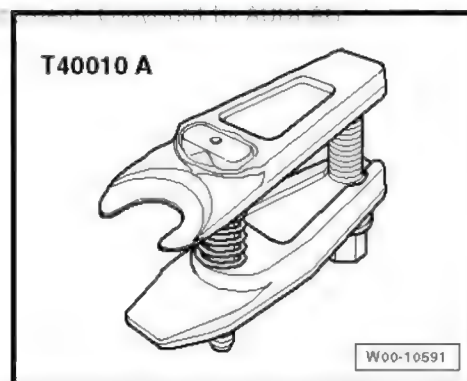
- ◆ Torque wrench - V.A.G 1332-



- ◆ Ring spanner insert - V.A.G 1332/7-



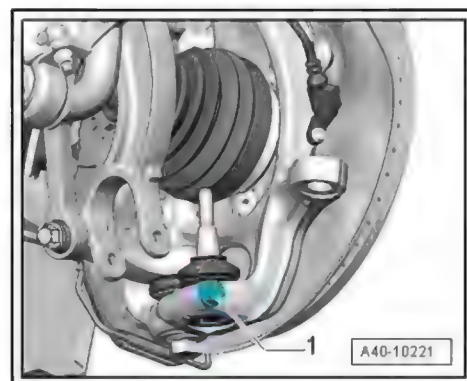
- ◆ Ball joint puller - T40010 A-



- ◆ For vehicles with air suspension: vehicle diagnostic tester

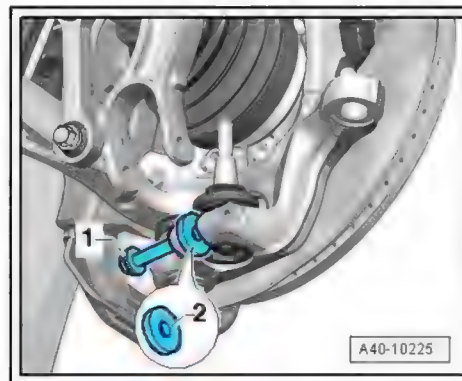
Removing

- Remove track control link ➔ [page 91](#) .
- Remove bolt -1-.





- Insert washer -2- (or similar part) into slot on wheel bearing housing. Choose a washer (or similar part) with the same width as the slot.
- Screw in bolt -1- from rear side until it makes contact with washer (or similar part).
- Widen slot on wheel bearing housing by screwing bolt -1- further in (half a turn).
- Take swivel joint out of wheel bearing housing.



### Installing

Installation is carried out in reverse sequence. Note the following:

- Insert swivel joint -1- all the way onto contact surface -arrows- on wheel bearing housing -2-.



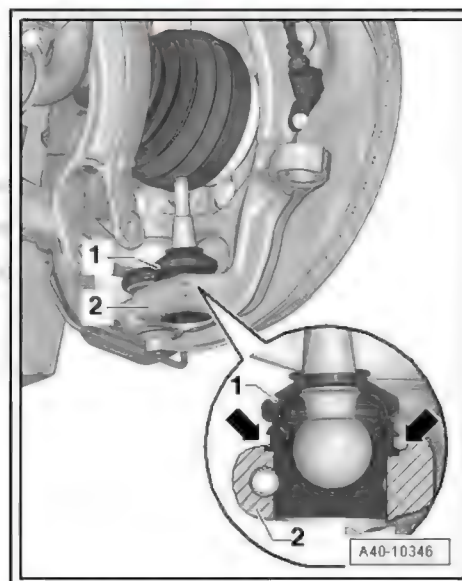
#### Note

*If the swivel joint -1- does not make proper contact with the surface -arrows-, damage may occur in the area of the bolted connection on the wheel bearing housing -2-.*

- Install track control link ➔ [page 91](#) .
- Fit wheel ➔ [page 329](#) .
- Check and adjust wheel alignment as required, see chart ➔ [page 344](#) .

### Tightening torques

- ♦ ➔ [“4.1 Exploded view - lower suspension links, swivel joint”, page 89](#)



## 4.6 Removing and installing bonded rubber bush for guide link

Special tools and workshop equipment required

- ♦ Thrust plate - VW 402-

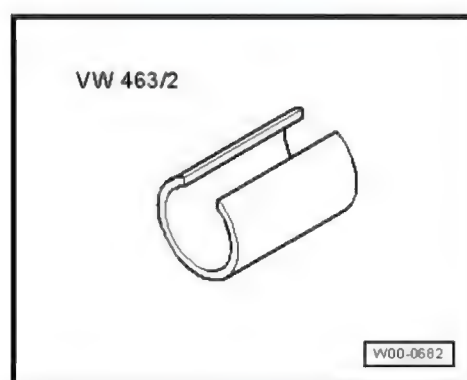




◆ Press tool - VW 412-



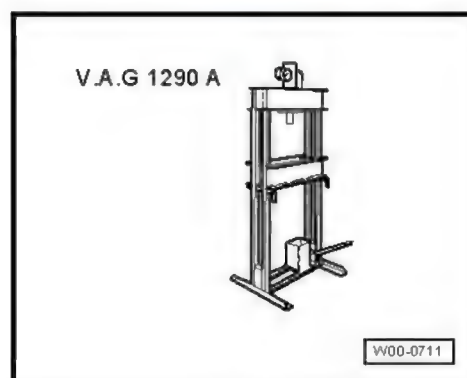
◆ Tube - VW 463/2-



◆ Sleeve - 3144-



◆ Workshop press - V.A.G 1290A-



◆ Assembly lubricant (diluted 1:20 with water); for correct type refer to ⇒ **Electronic parts catalogue**

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### Pressing out bonded rubber bush

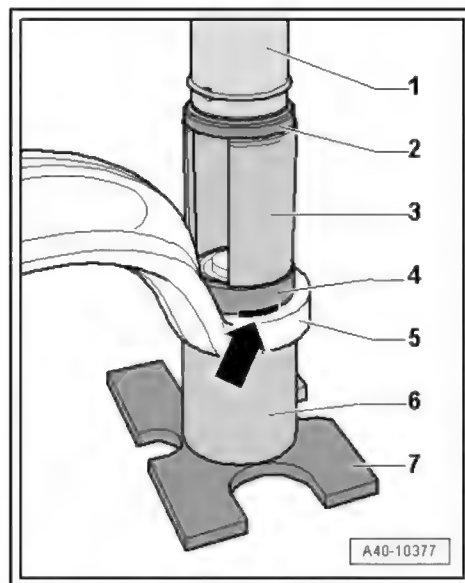
- Guide link removed ⇒ [page 94](#)
- Mark installation position -arrow- on bonded rubber bush -4- at top and bottom.

Use a waterproof felt-tip pen or similar for marking.

- Set up special tools as shown in illustration:

- 1 - Press tool of workshop press - V.A.G 1290A-
- 2 - Press tool - VW 412-
- 3 - Tube - VW 463/2-
- 4 - Bonded rubber bush
- 5 - Guide link
- 6 - Sleeve - 3144-
- 7 - Thrust plate - VW 402-

- Press bonded rubber bush -4- out of guide link -5-.



### Note

*Hold the guide link when pressing the bonded rubber bush in or out.*

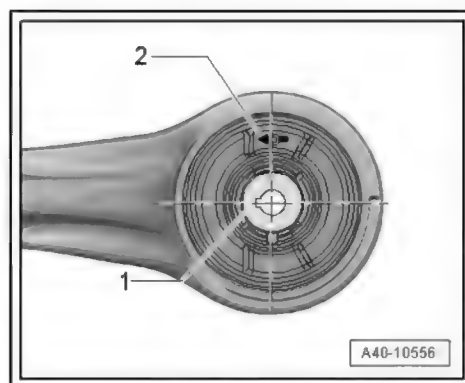
### Pressing in bonded rubber bush

- Transfer marking for installation position from old bonded rubber bush to new bush.
- Lightly lubricate new bush with assembly lubricant ⇒ Electronic parts catalogue .

### Installation position of bonded rubber bush

Slot in core of bush -1- should be in line with centre line of guide link and should point towards inside of guide link.

Arrow -2- should point towards inside of guide link.



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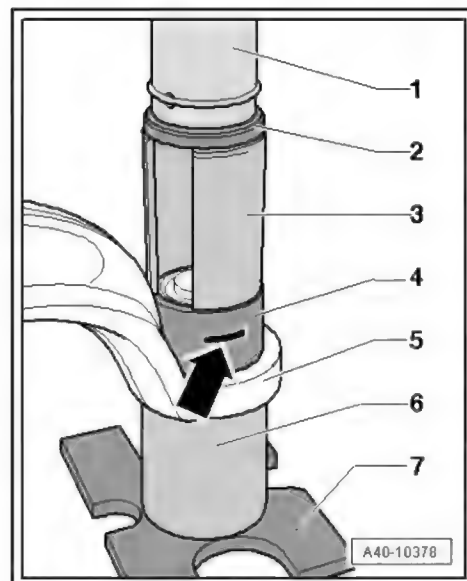


- Fit bonded rubber bush -4- into guide link -5- (note correct installation position).
- Set up special tools as shown in illustration:
  - 1 - Press tool of workshop press - V.A.G 1290A-
  - 2 - Press tool - VW 412-
  - 3 - Tube - VW 463/2-
  - 4 - Bonded rubber bush
  - 5 - Guide link
  - 6 - Sleeve - 3144-
  - 7 - Thrust plate - VW 402-



**Note**

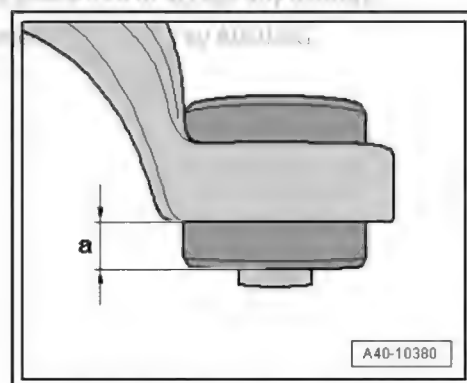
*Make sure bonded rubber bush remains straight while pressing in.*



- Press bonded rubber bush -4- into guide link -5-.
- Note marking made before removal -arrow-.
- Check installation depth -a- of bonded rubber bush in guide link.

Dimension -a- = 18 mm

- If dimension -a- is not attained, press bonded rubber bush in further.
- Install guide link ➔ [page 94](#) .





## 5 Wheel bearing

⇒ "5.1 Exploded view - wheel bearing", page 108

⇒ "5.2 Removing and installing wheel bearing housing",  
page 110

⇒ "5.3 Removing and installing wheel bearing unit", page 113

⇒ "5.4 Servicing wheel bearing unit", page 115

### 5.1 Exploded view - wheel bearing

#### 1 - Nut

- ☐ 40 Nm
- ☐ Always renew if removed

#### 2 - Upper link (front)

#### 3 - Upper link (rear)

#### 4 - Bolt

- ☐ Always renew if removed

#### 5 - Washer

#### 6 - Wheel bearing housing

- ☐ Removing and installing  
⇒ [page 110](#)

#### 7 - Splash plate for brakes

#### 8 - Bolt

- ☐ Tightening torque ⇒  
Brake system; Rep. gr.  
46 ; Front brakes; Exploded  
view - front brake

#### 9 - Bolt

- ☐ 200 Nm +180°
- ☐ Always renew if removed ⇒ [page 3](#)
- ☐ Before securing, clean  
the threads in the CV  
joint using a thread tap

#### 10 - Wheel hub

- ☐ Removing and installing  
⇒ [page 115](#)
- ☐ Permissible lateral run-  
out of wheel hub (at out-  
er diameter) when installed: max. 0.02 mm

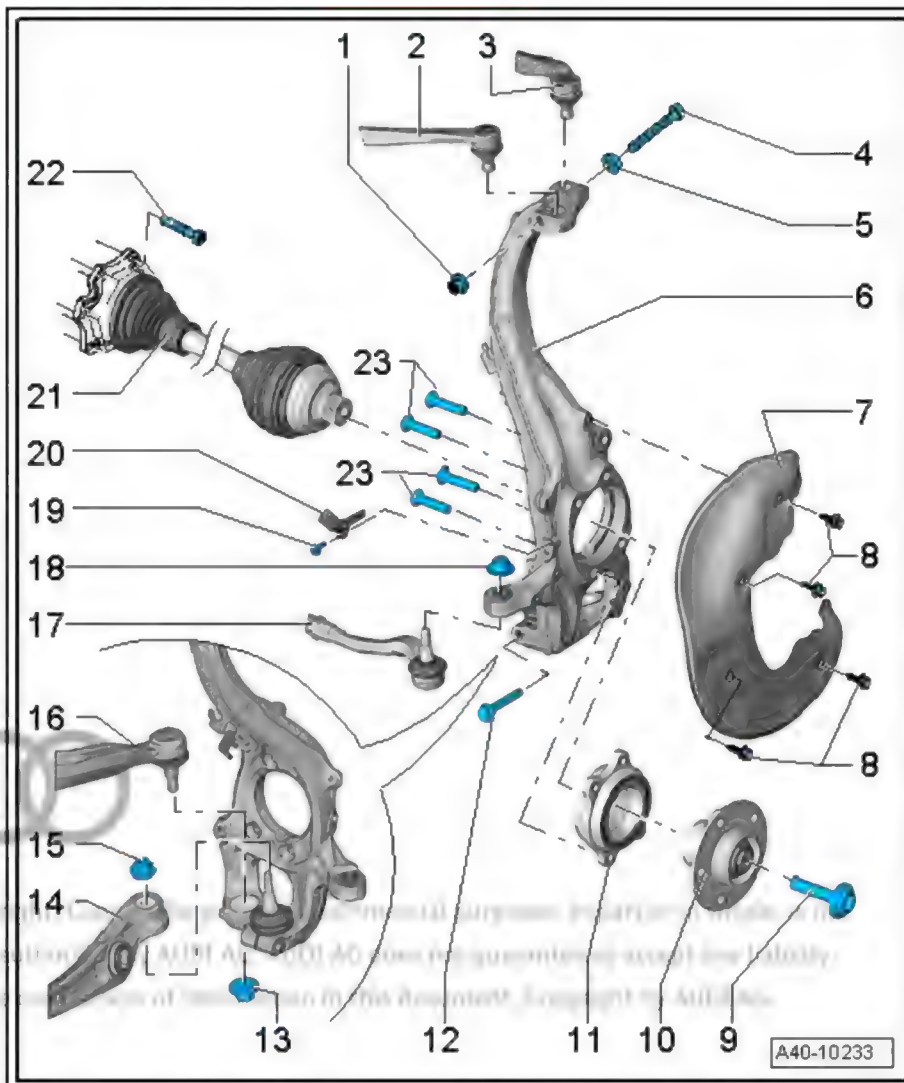
- ☐ Measure lateral run-out with dial gauge - VAS 6079- and dial gauge bracket for brake discs - VAS 6079/1-

#### 11 - Wheel bearing

- ☐ Removing and installing wheel bearing unit ⇒ [page 113](#)
- ☐ Removing and installing ⇒ [page 115](#)

#### 12 - Bolt

- ☐ 40 Nm
- ☐ Always renew if removed







13 - Nut

- ☐ 140 Nm
- ☐ Always renew if removed
- ☐ After detaching guide link from wheel bearing housing, remove residual adhesive from thread of joint pin.

14 - Track control link

15 - Nut

- ☐ M12: 120 Nm
- ☐ M14: 140 Nm
- ☐ Different versions; for correct version, refer to ⇒ Electronic parts catalogue
- ☐ Always renew if removed
- ☐ After detaching swivel joint from wheel bearing housing, remove residual adhesive from thread of joint pin.

16 - Guide link

17 - Track rod ball joint

18 - Nut

- ☐ Tightening torque ⇒ [page 402](#)
- ☐ Always renew if removed

19 - Bolt

- ☐ Tightening torque ⇒ Brake system; Rep. gr. 45 ; Sensors; Exploded view - front wheel speed sensor

20 - Speed sensor

21 - Drive shaft

22 - Bolt

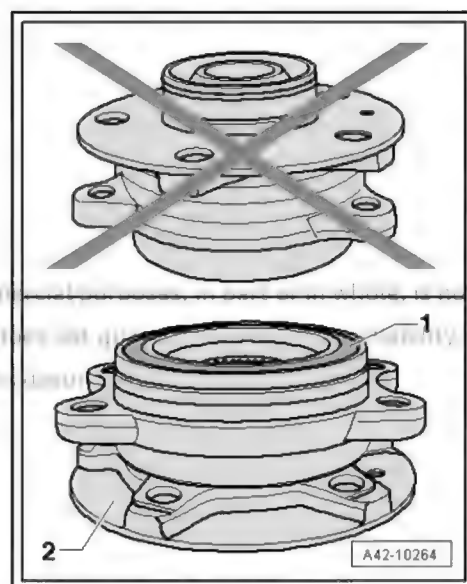
- ☐ M10: 50 Nm + 90°
- ☐ M12: 90 Nm + 90°
- ☐ Always renew if removed

23 - Countersunk bolts

- ☐ 80 Nm +90°
- ☐ Always renew if removed

Avoid dirtying or damaging the seal when picking up, laying down or storing the wheel bearing

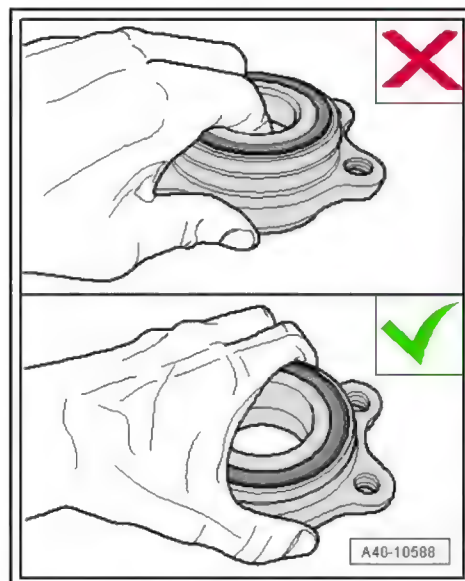
- The wheel bearing -1- must always be pointing upwards.
- Always put down the wheel bearing unit with the wheel hub -2- facing downwards.







- Do not touch the inside of the wheel bearing when you pick it up.
- Always take hold of the outside of the wheel bearing.



## 5.2 Removing and installing wheel bearing housing

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



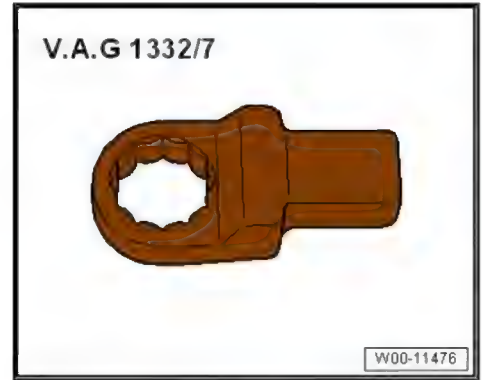
- ◆ Torque wrench - V.A.G 1332-





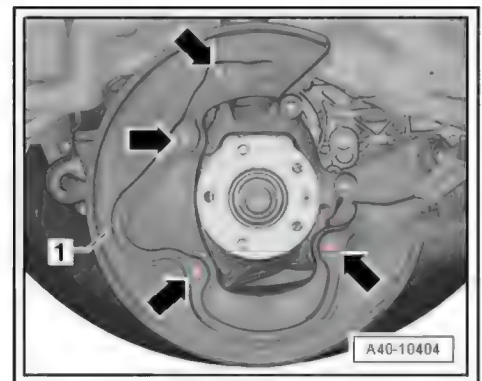
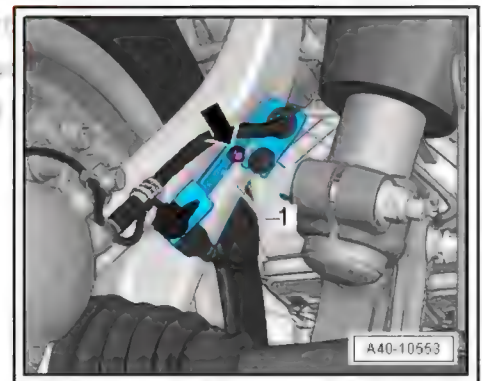


◆ Ring spanner insert - V.A.G 1332/7-



Removing

- Before starting work, measure distance from centre of wheel to lower edge of wheel housing  
⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#) or  
⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#) .
- Slacken bolt securing drive shaft to wheel hub ⇒ [page 124](#) .
- Remove bolt -arrow- and detach bracket -1- for brake line and electrical wiring from wheel bearing housing.
- Remove speed sensor (front) ⇒ Brake system; Rep. gr. 45 ; Sensors; Removing and installing front speed sensors -G45- / -G47- .
- Remove brake disc and brake caliper ⇒ Brake system; Rep. gr. 46 ; Front brakes; Removing and installing brake disc .
- Remove bolts -arrows- and take off splash plate -1-.
- Remove track control link ⇒ [page 91](#) .
- Unscrew nut on joint pin of guide link until it is flush with end of thread. Counterhold if necessary when loosening.







Leave nut screwed on a few turns to protect threads on joint pin.

- Press joint pin of guide link out of tapered seat using ball joint puller - T40042- .



- Unscrew bolted connection -1-.
- Take both joint pins of upper links -2- out of wheel bearing housing.

Do not attempt to enlarge slots in wheel bearing housing using a chisel or similar.

- Pull wheel bearing housing off drive shaft splines and remove.



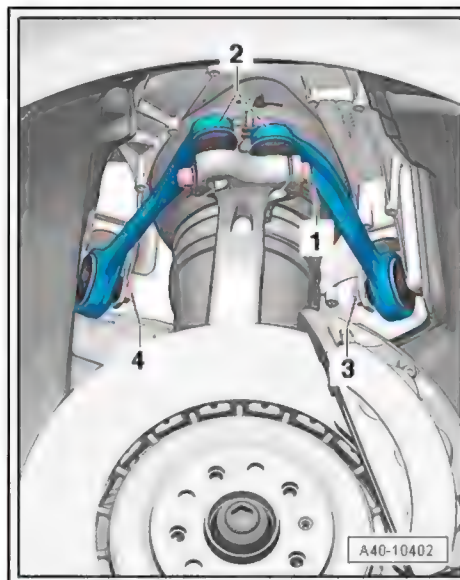
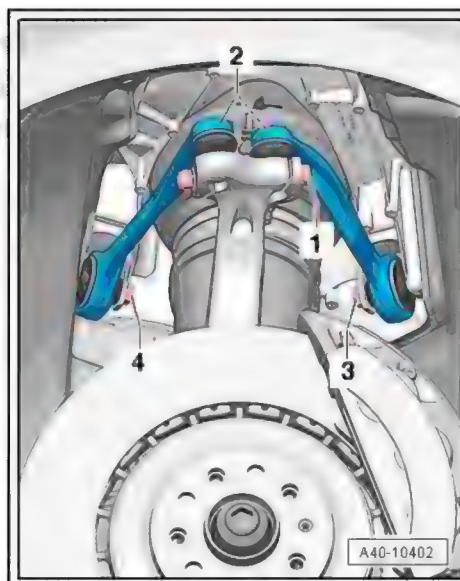
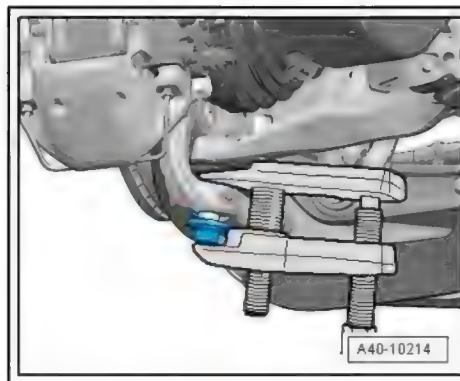
#### Note

- ◆ *Do not let the drive shaft hang down under its own weight, as otherwise excessive bending could damage the inner CV joint.*
- ◆ *Tie up drive shaft to body with wire.*

#### Installing

Installation is carried out in reverse sequence. Note the following:

- Push wheel bearing housing onto drive shaft splines.
- Fit both joint pins of upper links -2- into wheel bearing housing and insert bolt -1-.
- Remove remaining adhesive from thread of joint pin on swivel joint and guide link.
- Attach guide link to wheel bearing housing and tighten.
- Install track control link ➔ [page 91](#) .







#### Note

*Press down upper links -2- as far as possible while tightening nut.*

- Tighten bolted connection -1-.
- Install brake disc and brake caliper ⇒ Brake system; Rep. gr. 46 ; Front brakes; Removing and installing brake disc .
- Tighten bolt securing drive shaft to wheel hub ⇒ [page 124](#) .
- On vehicles with automatic headlight range control, perform basic setting of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .
- If the vehicle level sender has been removed and refitted or the linkage detached, the reference position must be re-adapted: start appropriate program on ⇒ Vehicle diagnostic tester in [Guided Functions](#).
- If the reference position has been re-adapted on vehicles with lane departure warning, the camera control unit - J852- must be recalibrated ⇒ [page 365](#) .
- Fit wheel ⇒ [page 329](#) .
- Check and adjust wheel alignment as required, see chart ⇒ [page 344](#) .

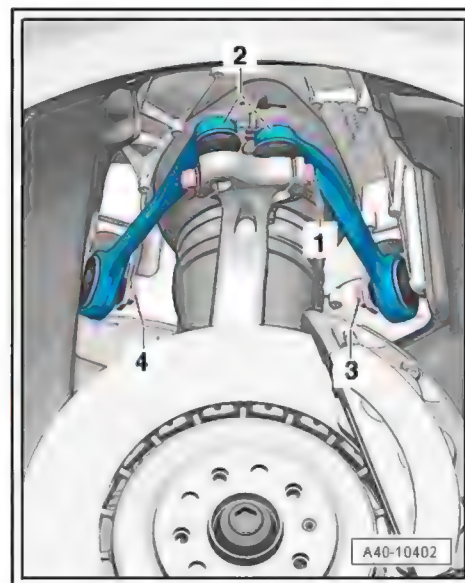
#### Tightening torques

- ◆ ⇒ ["5.1 Exploded view - wheel bearing", page 108](#)
- ◆ ⇒ ["4.1 Exploded view - lower suspension links, swivel joint", page 89](#)

### 5.3 Removing and installing wheel bearing unit

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



V.A.G 1331



W00-11166

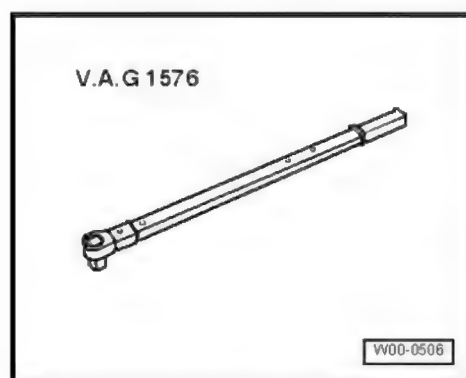




◆ Torque wrench - V.A.G 1332-

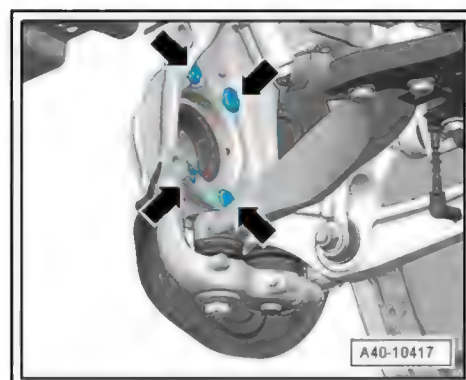


◆ Torque wrench - V.A.G 1576-



Removing

- Remove drive shaft ➔ [page 122](#) .
- Remove brake disc and brake caliper ➔ Brake system; Rep. gr. 46 ; Front brakes; Removing and installing brake disc .
- Remove speed sensor (front) ➔ Brake system; Rep. gr. 45 ; Sensors; Removing and installing front speed sensors -G45- / -G47- .
- Remove countersunk bolts -arrows-.
- Take out wheel bearing unit.



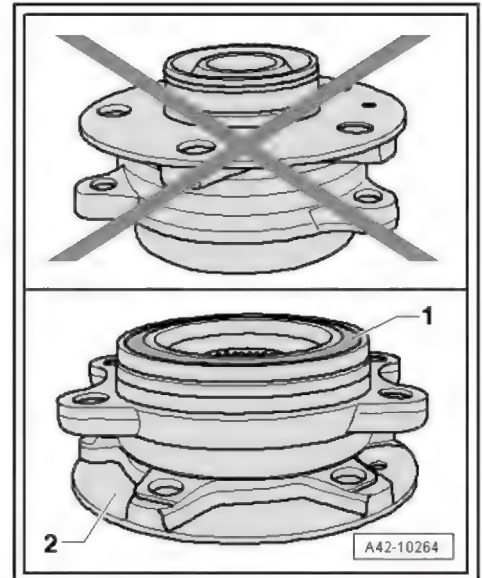
**NOTICE**

Avoid dirtying or damaging the seal when picking up, laying down or storing the wheel bearing.

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- The wheel bearing -1- must always be pointing upwards.
- Always put down the wheel bearing unit with the wheel hub -2- facing downwards.



- Do not touch the inside of the wheel bearing when you pick it up.
- Always take hold of the outside of the wheel bearing.
- Servicing wheel bearing unit ➔ [page 115](#) .

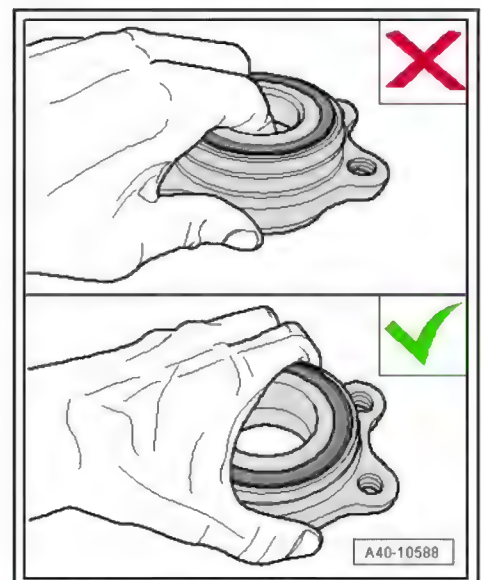
#### Installing

Installation is carried out in reverse sequence. Note the following:

- Install drive shaft ➔ [page 122](#) .
- Fit wheel ➔ [page 329](#) .

#### Tightening torques

- ◆ ➔ ["5.1 Exploded view - wheel bearing", page 108](#)



## 5.4 Servicing wheel bearing unit

Special tools and workshop equipment required

- ◆ Thrust plate - VW 401-





◆ Thrust plate - VW 402-



◆ Press tool - VW 412-



◆ Assembly tool - T10230-



- ◆ Workshop press - VAS 6654- , not illustrated
- ◆ Puller set for inner bearing races - VAS 701 003- (not illustrated)

## Procedure

- Wheel bearing unit removed ⇒ [page 113](#)





#### Pressing wheel hub out of wheel bearing

- Set up special tools as shown in illustration.

1 - Press tool - VW 412-

2 - Sleeve - T10230/3-

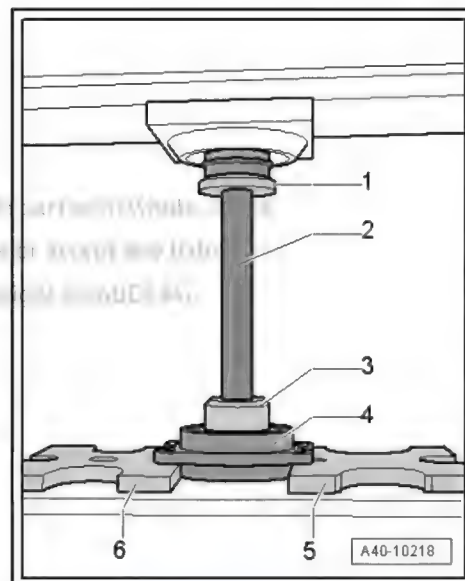
3 - Thrust piece - T10230/8-

4 - Wheel bearing unit

5 - Thrust plate - VW 402-

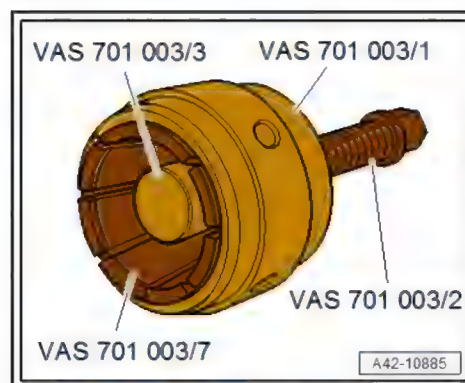
6 - Thrust plate - VW 401-

- Press wheel hub out of wheel bearing.



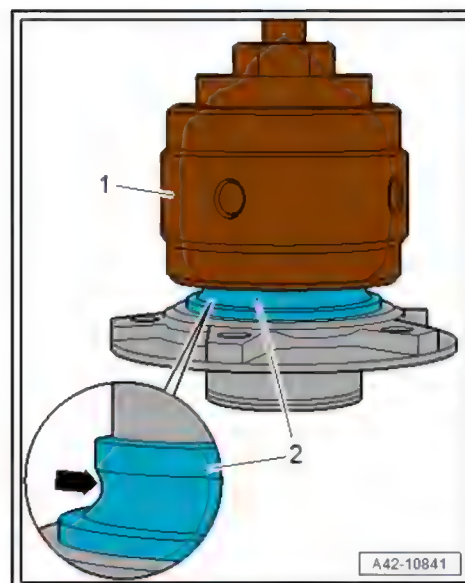
#### Pressing inner bearing race off wheel hub

- Prepare puller from puller set for inner bearing races - VAS 701 003- as follows:
- Screw clamping sleeve - VAS 701 003/1- onto clamp tensioner - VAS 701 003/7- .
- Screw threaded spindle - VAS 701 003/2- into clamping sleeve and fit thrust piece - VAS 701 003/3- .



#### Inner bearing race version 1:

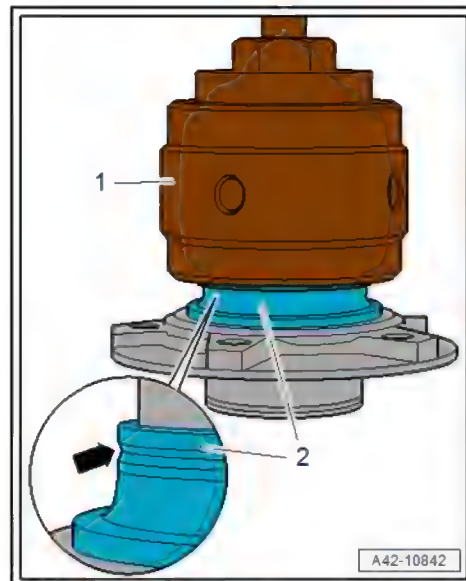
- Remove ball cage from inner bearing race -2-.
- Apply puller -1- to ball raceways -arrow- of inner race, as shown.





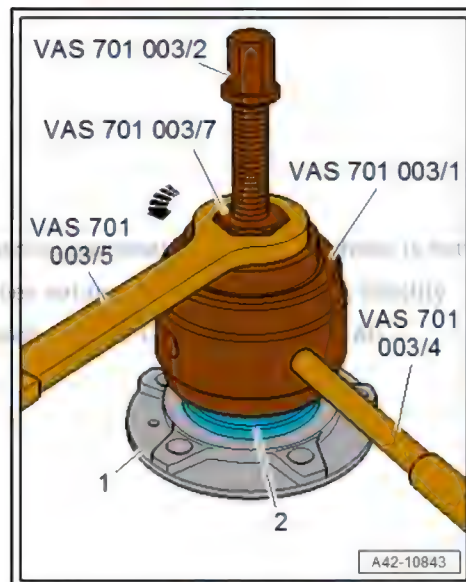
#### Inner bearing race version 2:

- Apply puller -1- to groove -arrow- of inner race -2-.



#### All versions (continued):

- Clamp puller in place on inner race -2-; to do so, use spanner -VAS 701 003/7- to turn clamp tensioner -VAS 701 003/5- in direction of -arrow- and counterhold clamping sleeve -VAS 701 003/1- with tensioner handle -VAS 701 003/4-.
- Use threaded spindle -VAS 701 003/2- to detach inner bearing race from wheel hub -1-.







## Pressing wheel hub into wheel bearing

Instructions for handling wheel bearing ⇒ [page 115](#)

– Set up special tools as shown in illustration.

1 - Press tool - VW 412-

2 - Thrust plate - VW 402-

3 - Wheel hub

4 - Wheel bearing

5 - Thrust plate - VW 401-

- The machined surface of the wheel bearing outer race faces downwards.

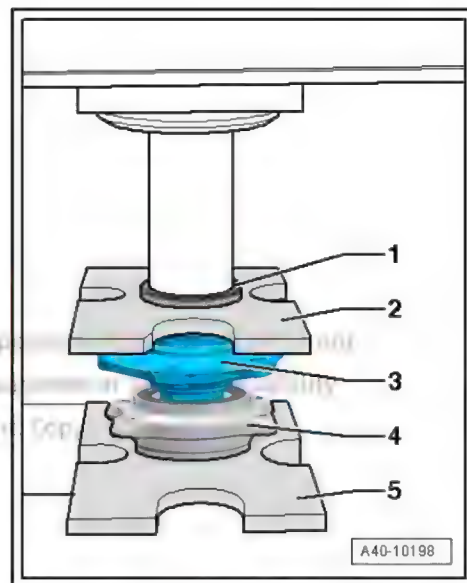


Take precautions not to damage or dirty the wheel bearing.

- ◆ Make sure no dirt gets between thrust plate - VW 401- and wheel bearing when pressing in the hub or when the parts are placed on a workbench, etc.

– Press wheel hub into wheel bearing.

– Install wheel bearing unit ⇒ [page 113](#) .







## 6 Drive shaft

⇒ ["6.1 Overview - drive shaft", page 120](#)

⇒ ["6.2 Exploded view - drive shaft", page 120](#)

⇒ ["6.3 Removing and installing drive shaft", page 122](#)

⇒ ["6.4 Loosening and tightening bolt securing drive shaft",  
page 124](#)

⇒ ["6.5 Dismantling and assembling drive shaft", page 125](#)

⇒ ["6.6 Servicing constant velocity joint", page 131](#)

⇒ ["6.7 Checking outer constant velocity joint", page 132](#)

⇒ ["6.8 Tightening hose clip on triple roller joint and outer joint",  
page 133](#)

### 6.1 Overview - drive shaft

- ◆ Peened triple roller joint AAR 3300 i with outer constant velocity joint (94 mm diameter)
- ◆ Peened triple roller joint AAR 3300 i with outer constant velocity joint (98 mm diameter)
- ◆ Peened triple roller joint AAR 3300 i with outer constant velocity joint (100 mm diameter)
- ◆ Peened triple roller joint AAR 3300 i with outer constant velocity joint (106 mm diameter)

### 6.2 Exploded view - drive shaft



#### 1 - Hose clip

- ☐ Different versions (depending on type of drive shaft)
- ☐ Always renew if removed
- ☐ Tightening ➔ [page 133](#)

#### 2 - Boot

- ☐ A triple roller joint adapter is installed on drive shafts with peened triple roller joint AAR 3300 i
- ☐ Boot must rest in groove and on contour of joint body.

#### 3 - Hose clip

- ☐ Different versions (depending on type of drive shaft)
- ☐ Always renew if removed
- ☐ Tightening ➔ [page 133](#)

#### 4 - Circlip

- ☐ Always renew if removed
- ☐ Fit into annular groove on shaft before installing (no longer visible once joint is installed)
- ☐ Before fitting constant velocity joint, align circlip centrally with opening facing upwards.

#### 5 - Outer constant velocity joint

- ☐ Renew only as complete unit
- ☐ Removing ➔ [page 131](#)
- ☐ Checking ➔ [page 132](#)
- ☐ Installing ➔ [page 131](#)
- ☐ Greasing ➔ [page 122](#)
- ☐ Grease splines on drive shaft lightly with grease used in joint when fitting joint onto drive shaft

#### 6 - Bolt

- ☐ 200 Nm +180°
- ☐ Always renew if removed
- ☐ Before securing, clean the threads in the CV joint using a thread tap
- ☐ Keep to specified sequence when loosening and tightening bolt securing drive shaft to wheel hub ➔ [page 124](#)

#### 7 - Hose clip

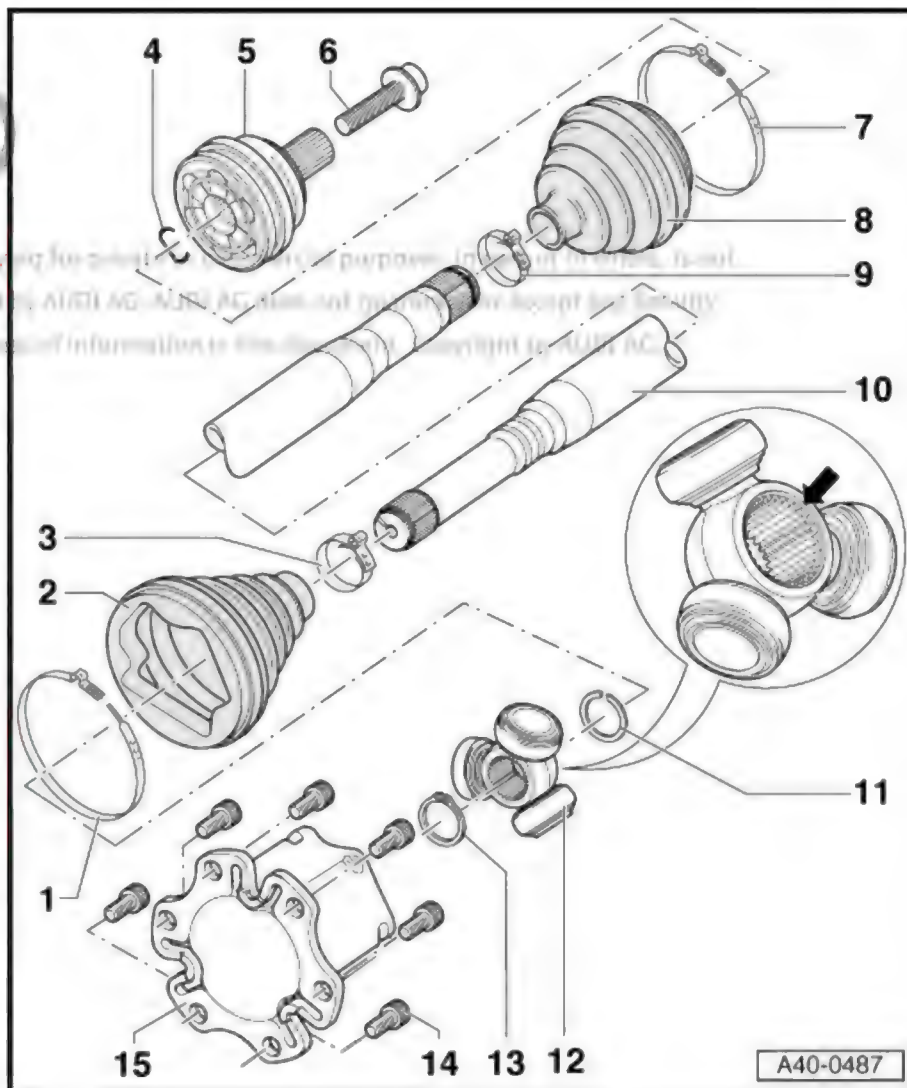
- ☐ Always renew if removed
- ☐ Tightening ➔ [page 133](#)

#### 8 - Boot for outer constant velocity joint

- ☐ Check for splits and chafing

#### 9 - Hose clip

- ☐ Always renew if removed







- ☐ Tightening ⇒ [page 133](#)

#### 10 - Drive shaft

- ☐ Removing and installing ⇒ [page 122](#)

#### 11 - Circlip

- ☐ Always renew if removed
- ☐ Insert in groove on shaft

#### 12 - Triple roller spider

- ☐ Mark installation position before removing
- ☐ ⇒ ["6.5 Dismantling and assembling drive shaft", page 125](#)
- ☐ Grease splines on drive shaft lightly with grease used in joint when fitting triple roller spider onto drive shaft

#### 13 - Circlip

- ☐ Always renew if removed
- ☐ Insert in groove on shaft

#### 14 - Bolt

- ☐ Always renew if removed
- ☐ For correct version refer to ⇒ Electronic parts catalogue
- ☐ Tightening torque ⇒ [Item 22 \(page 109\)](#)

#### 15 - Joint body

- ☐ ⇒ ["6.5 Dismantling and assembling drive shaft", page 125](#)

### Grease quantity and type

Regrease joint when renewing boot.

For required grease filling of joints, refer to ⇒ Electronic parts catalogue .



#### Note

*Note that different types of grease are required for outer and inner joints.*

	Grease	of which in:	
Outer joint	Total quantity	Joint	Boot
Ø mm	[g]	[g]	[g]
94	approx. 194	approx. 70 <sup>1)</sup>	approx. 124
98	approx. 214	approx. 80 <sup>1)</sup>	approx. 134
100	approx. 140	approx. 80 <sup>1)</sup>	approx. 60
106	approx. 280	approx. 80 <sup>1)</sup>	approx. 200

	Grease	of which in:	
Inner joint	Total quantity	Joint	Boot
Designation	[g]	[g]	[g]
AAR 3300 i	approx. 160	approx. 90	approx. 70

1) Pack this amount of grease into joint through splines of ball hub. Distribute remainder on face of joint underneath boot.

## 6.3 Removing and installing drive shaft

### Special tools and workshop equipment required





◆ Torque wrench - V.A.G 1332-



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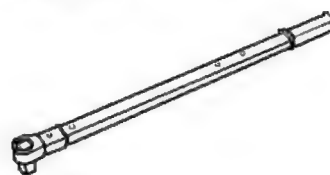
V.A.G 1332



W00-11165

◆ Torque wrench - V.A.G 1576-

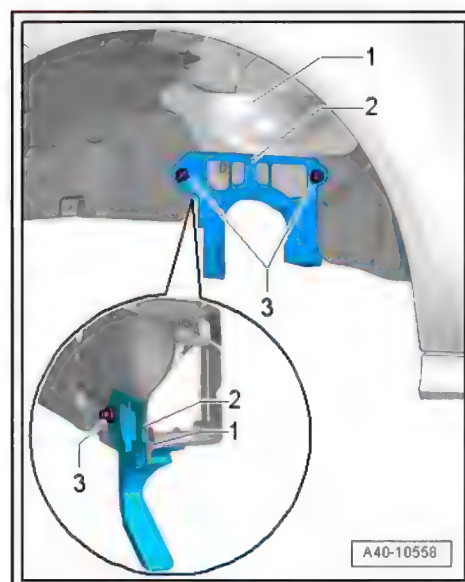
V.A.G 1576



W00-0506

Removing

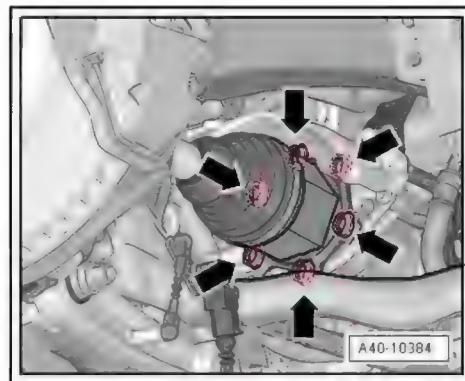
- Slacken bolt securing drive shaft to wheel hub ➔ [page 124](#) .
- Remove wheel ➔ [page 329](#) .
- Remove noise insulation (rear) ➔ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- If fitted, remove nuts -3- and detach cover -2- for drive shaft on both sides.
- Tilt upper part of cover -2- outwards and disengage from underneath at flange -1-.
- Detach both heat shields from subframe ➔ [page 52](#) .
- If fitted, move auxiliary water pump to one side with lines still connected.



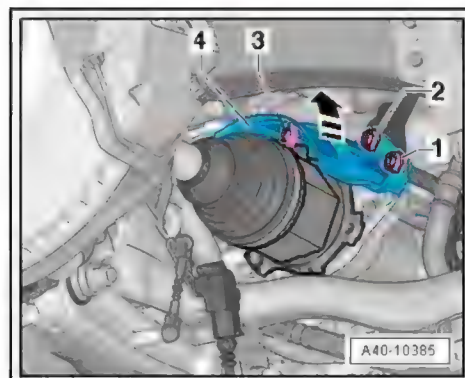
A40-10558



- Remove bolts -arrows- from flange shaft on gearbox.



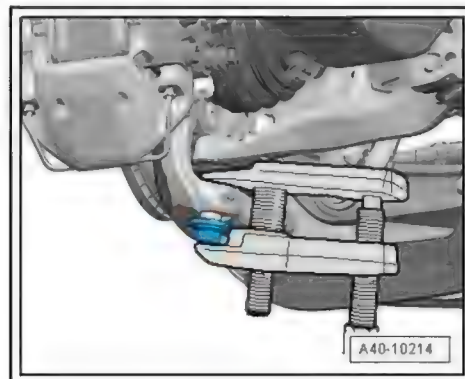
- Remove bolts -1, 2 and 3- and detach heat shield -4-.



- Unscrew nut on joint pin of guide link until it is flush with end of thread. Counterhold if necessary when loosening.

Leave nut screwed on a few turns to protect threads on joint pin.

- Press joint pin of guide link out of tapered seat using ball joint puller - T40042- .
- Turn wheel bearing housing inwards as far as possible.
- Take out drive shaft.



#### Note

- ◆ When removing drive shaft, take care not to damage boot.
- ◆ -Arrow- can be disregarded.

#### Installing

Installation is carried out in reverse sequence. Note the following:

- Fit wheel ➔ [page 329](#) .

#### Tightening torques

- ◆ ➔ ["6.2 Exploded view - drive shaft", page 120](#)
- ◆ ➔ ["6.4 Loosening and tightening bolt securing drive shaft", page 124](#)
- ◆ Bolts for heat shield: 23 Nm
- ◆ ➔ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

## 6.4 Loosening and tightening bolt securing drive shaft

Special tools and workshop equipment required



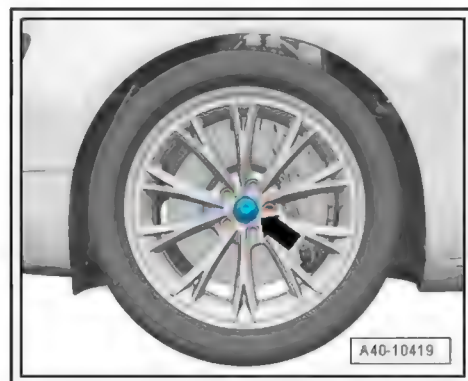


◆ Torque wrench - V.A.G 1576-



Loosening bolt securing drive shaft to wheel hub

- To avoid damage to wheel bearing, slacken off bolt no further than 90° with vehicle standing on its wheels.
- Raise vehicle so that wheels are off the ground.
- Have a second mechanic press the brake pedal.
- Remove bolt -arrow-.



Tightening bolt securing drive shaft to wheel hub

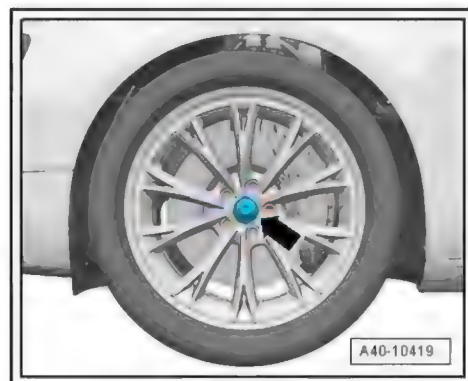
- Renew bolt -arrow-.



Note

- ◆ *Before securing, clean the threads in the CV joint using a thread tap*
- ◆ *The wheels must not be in contact with the ground when initially tightening the drive shaft bolt; otherwise the wheel bearing can be damaged.*

- Have a second mechanic press the brake pedal.
- Tighten bolt to 200 Nm.
- Lower vehicle onto its wheels.
- Turn bolt 180° further.



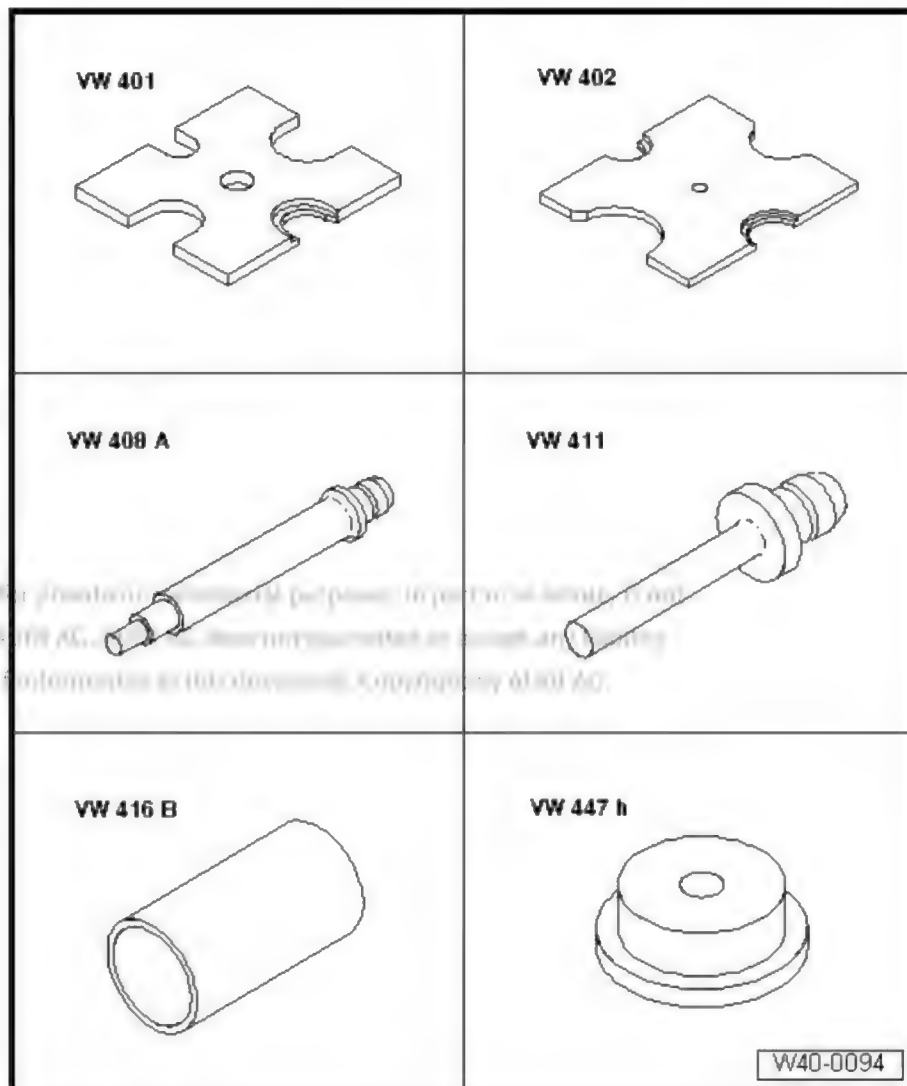
## 6.5 Dismantling and assembling drive shaft



# Special tools and workshop equipment required



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- ◆ Thrust plate - VW 401-
- ◆ Thrust plate - VW 402-
- ◆ Press tool - VW 408 A-
- ◆ Press tool - VW 411-
- ◆ Tube - VW 416 B-
- ◆ Thrust pad - VW 447 H-
- ◆ Torque wrench - V.A.G 1331-





◆ Torque wrench - V.A.G 1332-



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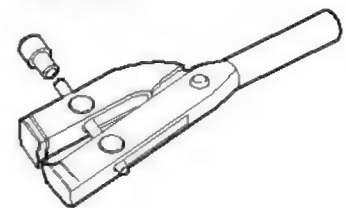
V.A.G 1332



W00-11165

◆ Clamp tensioner - V.A.G 1682A-

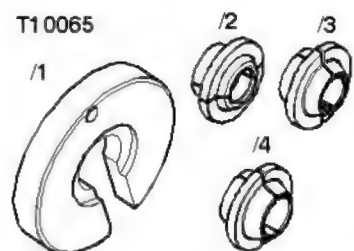
V.A.G 1682



W00-0448

◆ Assembly tool - T10065-

T10065



W00-1070

◆ Multi-purpose tool - VW 771-

VW 771



W00-11119



- ◆ Assembly tool - T40018- for triple roller joint AAR 3300 i



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### Dismantling triple roller joint AAR 3300 i

- Clamp drive shaft horizontally in vice.



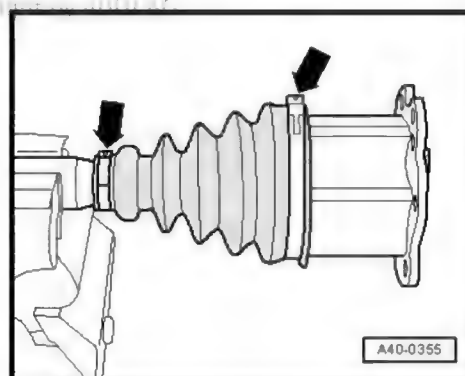
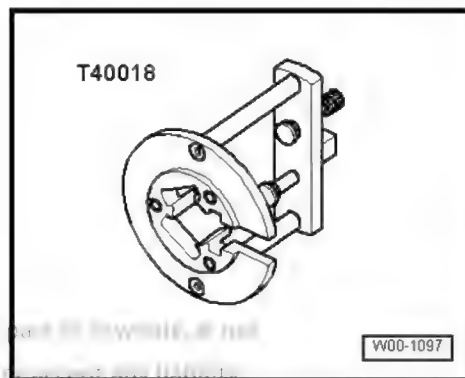
#### Note

- ◆ Use jaw protectors for vice.
- ◆ Take care not to damage drive shaft.
- Mark position of joint body relative to drive shaft.

The joint may be noisy if these parts are not marked and reinstalled in their original positions.

Use a waterproof felt-tip pen for marking.

- Open hose clips -arrows-.
- Push back boot.



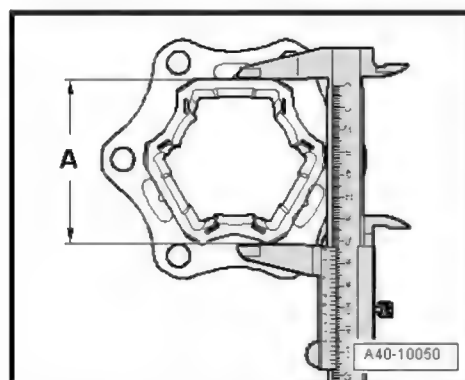
### Determining which assembly tool to use for removal of joint body

- Measure dimension -A- as shown.
- ◆ Dimension -A- approx. 76 mm = drive shaft with triple roller joint AAR 3300 i; use assembly tool - T40018-



#### NOTICE

It is important to use the correct special tools for the different drive shafts.

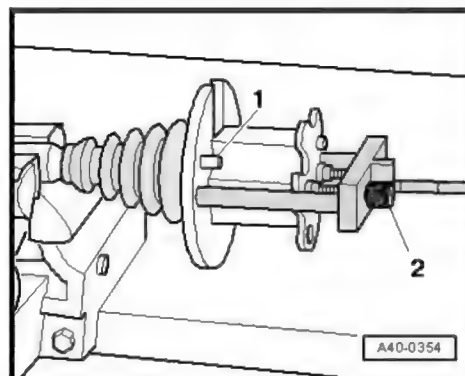


- Insert assembly tool - T40018- for triple roller joint AAR 3300 i behind joint body.
- Locating pin -1- must lie against outside of joint body.
- Bring assembly tool - T40018- into contact with joint body by turning knurled screws -2-.



#### Note

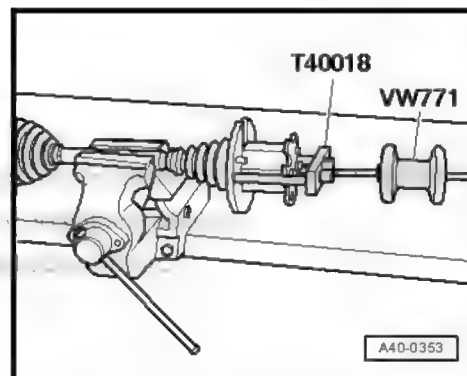
- ◆ Joint body must be fixed in assembly tool - T40018- without play.
- ◆ Tighten screws -2- only hand-tight.







- Screw multi-purpose tool - VW 771- into removal and assembly tool - T40018- .
- Remove joint body by knocking horizontally.
- Leave joint body clamped in assembly tool - T40018- .



- Mark installation position of components -1- and -2- as shown.

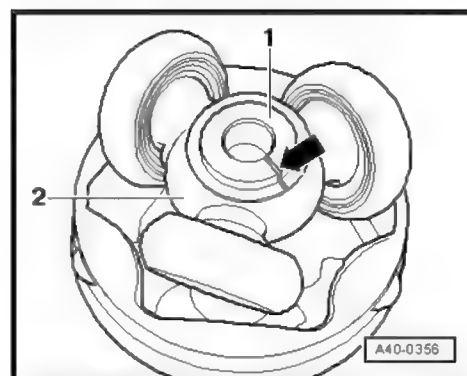
The joint may be noisy if these parts are not marked and reinstalled in their original positions.

Use a waterproof felt-tip pen for marking.

1 - Drive shaft

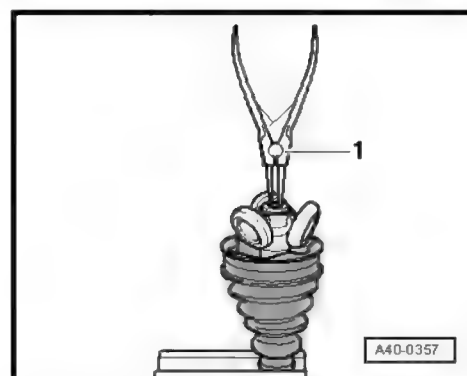
2 - Triple roller spider

- Remove grease with a lint-free cloth.



- Remove circlip.

1 - Pliers (commercial type)



Press triple roller spider off drive shaft.

- Use the special tools shown in the illustration.

1 - Assembly tool - T10065/1-

2 - Assembly tool - T10065/5- , must make contact with base of triple roller spider

3 - Thrust plate - VW 401-

4 - Press tool - VW 408 A-

5 - Thrust plate - VW 402-

- Assembly tool - T10065/5- must not rest on rollers (swivel the rollers aside if necessary).

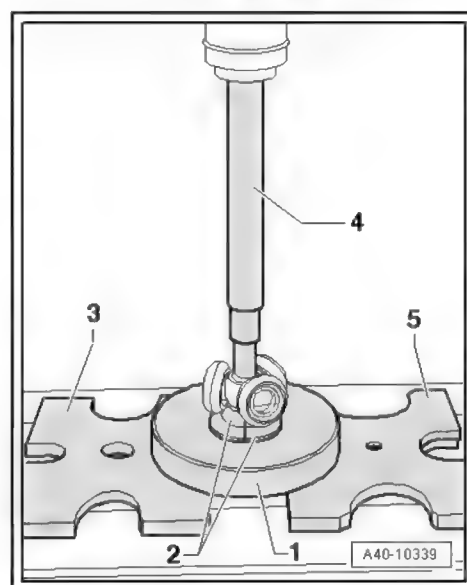
- Press triple roller spider off drive shaft.

- Pull off boot.

- Remove grease from shaft splines.

- Check rollers and roller races for wear.

- Clean drive shaft and housing.

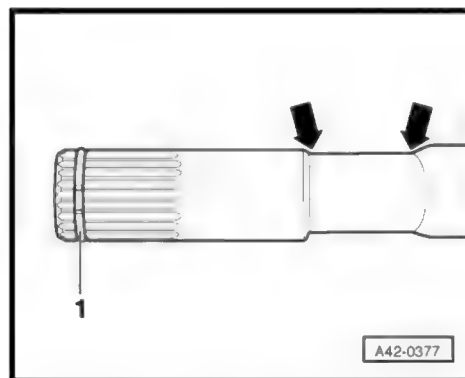






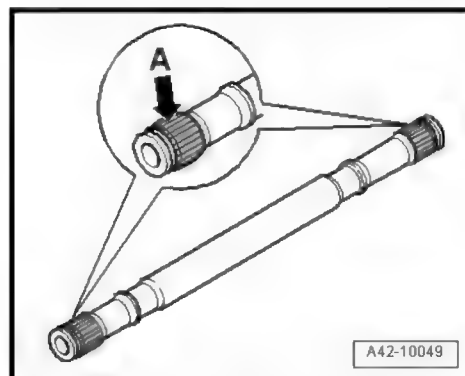
### Assembling triple roller joint AAR 3300 i

- Push on small hose clip with joint boot and bring boot into position on drive shaft.
- Position boot between -arrows-.



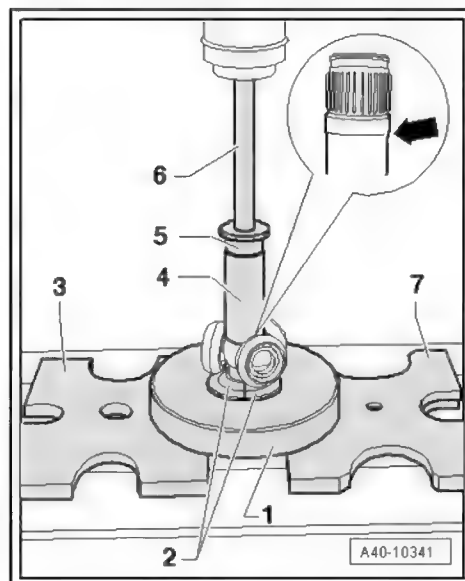
### Pressing triple roller spider onto drive shaft

- Grease splines -A- on drive shaft lightly with grease used in joint before fitting joint or triple roller spider onto drive shaft.
- Fit triple roller spider onto shaft so that markings are aligned and drive home onto stop.

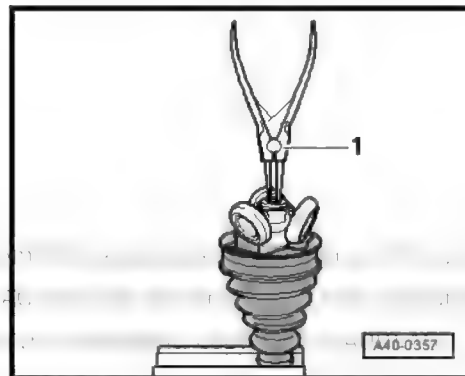


Use assembly tool - T10065/6- and make sure it grips drive shaft at bottom seam -arrow-.

- Use the special tools shown in the illustration.
- 1 - Assembly tool - T10065/1-
- 2 - Assembly tool - T10065/6- (assembly tool must grip drive shaft at bottom seam -arrow-)
- 3 - Thrust plate - VW 401-
- 4 - Tube - VW 416 B-
- 5 - Thrust plate - VW 447 H-
- 6 - Press tool - VW 411-
- 7 - Thrust plate - VW 402-
- Assembly tool - T10065/6- must not rest on rollers (swivel the rollers aside if necessary).

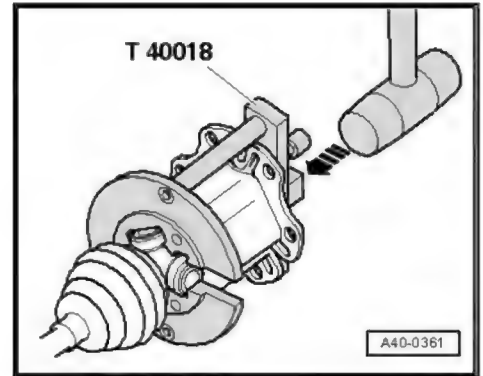


- Fit circlip.
- Circlip must engage audibly. Triple roller spider must lie directly against circlip (zero gap).
- 1 - Pliers (commercial type)
- Press 70 g of drive shaft grease from repair kit into rear of triple roller joint.
- Lightly grease the rollers.





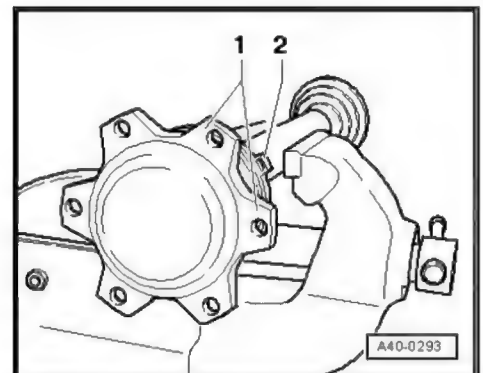
- Use plastic-headed hammer to drive joint body over triple roller spider. Make sure rollers are aligned straight.
- Pack remaining quantity of grease into boot.
- Make sure boot is properly positioned on joint body.
- Boot must rest in groove and on contour of joint body.
- Install hose clip.



### Note

*To facilitate fitting of multi-point socket head bolts when installing drive shaft, fastener lug -2- on hose clip must be positioned between mounting flanges -1- on joint body.*

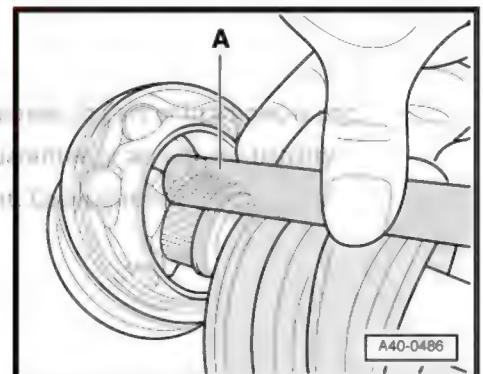
- Tighten hose clips on triple roller joint ➔ [page 133](#) .



## 6.6 Servicing constant velocity joint

### Removing outer constant velocity joint

- Clamp drive shaft in vice using protective jaw covers.
- Unfasten both clips and detach boot from outer joint.
- Use hammer to tap copper or brass drift -A- against inner race of constant velocity joint.
- Detach joint and boot.



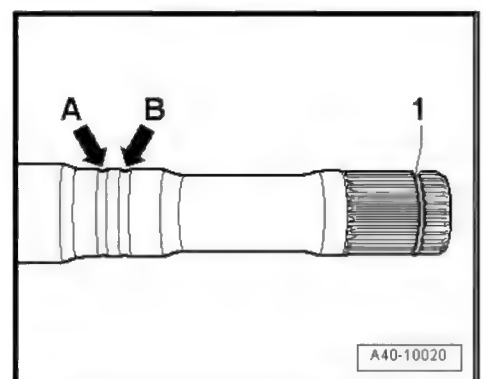
### Installing outer constant velocity joint

Boot and drive shaft must be free from grease.

- Always renew circlip -1-.
- Push on small hose clip with joint boot and bring boot into position on drive shaft.
- Position boot in outer groove -arrow B-.

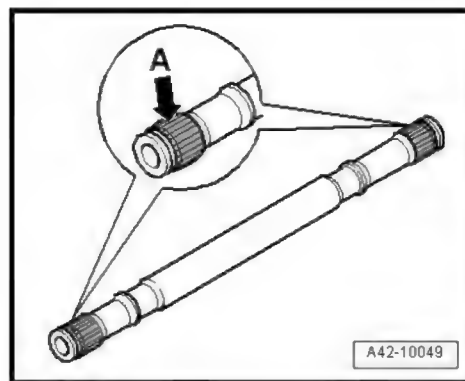
Inner groove -arrow A- remains visible ("identification groove" for correct boot assembly).

- Refer to table ➔ [page 122](#) and pack indicated quantity of grease inside joint body.

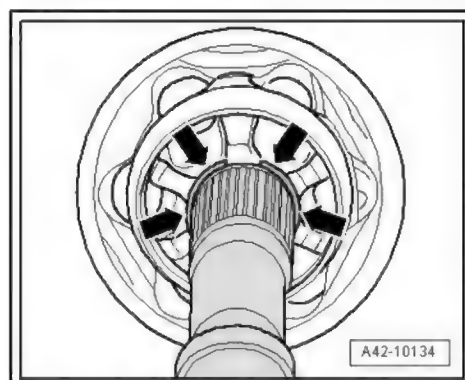




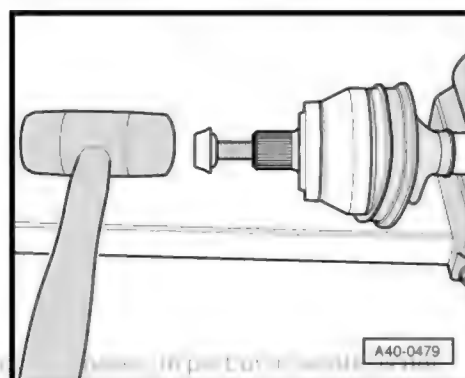
- Grease splines -A- on drive shaft lightly with grease used in joint before fitting joint body onto drive shaft.
- Fit circlip in groove on shaft.



- Slide on constant velocity joint as far as circlip.
- Align circlip so that opening faces upwards -arrows-.



- Screw old drive shaft bolt into joint body as shown.
- Use plastic hammer to drive joint onto drive shaft until circlip engages.
- Refer to table ➔ [page 122](#) and pack indicated quantity of grease into boot side of joint body.
- Push boot onto joint body.
- Vent air from boot.
- Make sure boot is properly positioned on joint body.
- Boot must rest in groove and on contour of joint body.
- Tighten hose clips on outer joint ➔ [page 133](#).



## 6.7 Checking outer constant velocity joint

The joint should be dismantled to renew dirty grease or for checking the balls and ball races for wear and damage.



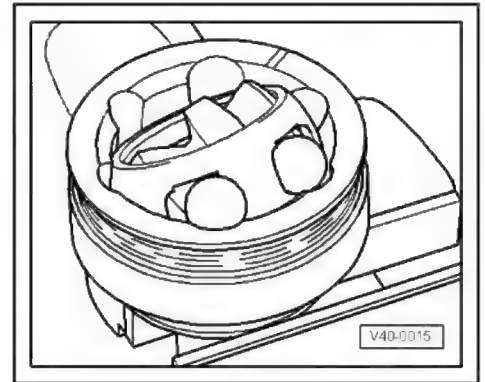
### Note

*Ball hub and joint body are paired and must be marked before dismantling. Ensure that the balls run in the same races after assembly.*

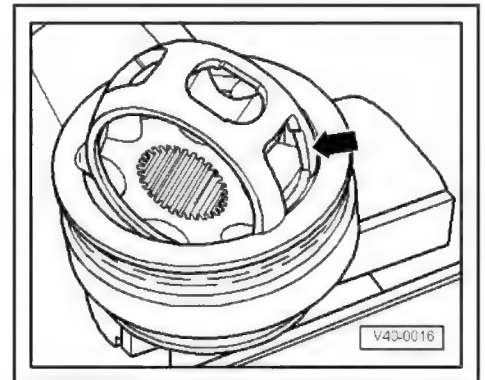


### Dismantling

- Before dismantling, mark position of ball hub in relation to ball cage and joint body with an electric scribe or oil stone.
- Swivel ball hub and ball cage.
- Take out balls one after the other.



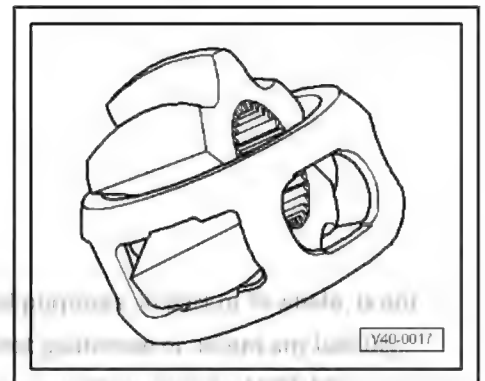
- Turn the cage until the two rectangular openings -arrow- are level with the joint body.
- Lift out cage together with hub.



- Swivel segment of hub with short lobe into square cage opening.
- Pivot hub out of cage.

### Checking

The balls in each joint belong to one tolerance group. Check stub axle, hub, cage and balls for pitting and signs of seizure. Excessive backlash in the joint will cause knocking or jolts under load change; in such cases the joint must be renewed. Polished areas and visible tracks in the ball races do not justify renewal of the joint.



### Assembling

- Fit cage with hub into joint body.



#### Note

- ◆ *When assembling the joint, make sure that the individual components are refitted in their original positions.*
- ◆ *Make sure cage is inserted in correct position (i.e. sides facing in same direction as original position).*
- Press in balls one after the other from opposite sides, taking care to re-establish original position of hub relative to cage and joint body.
- Pack required amount of grease into joint body ➔ [page 122](#) .

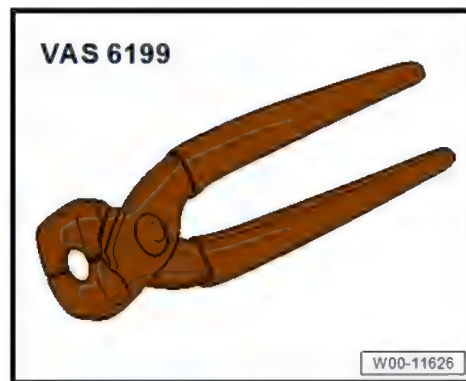
## 6.8 Tightening hose clip on triple roller joint and outer joint

Use the following tools depending on type of hose clip:

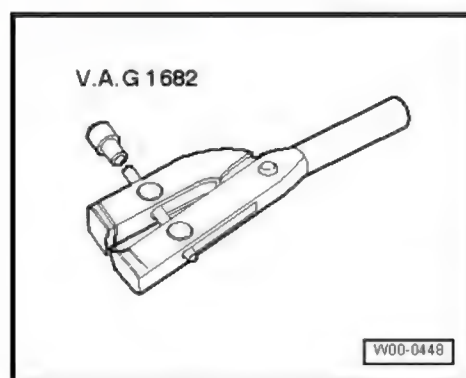
Special tools and workshop equipment required



◆ Locking pliers for Phaeton steering rack - VAS 6199-

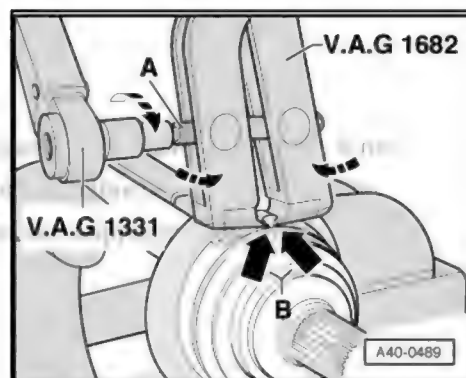


◆ Clamp tensioner - V.A.G 1682-



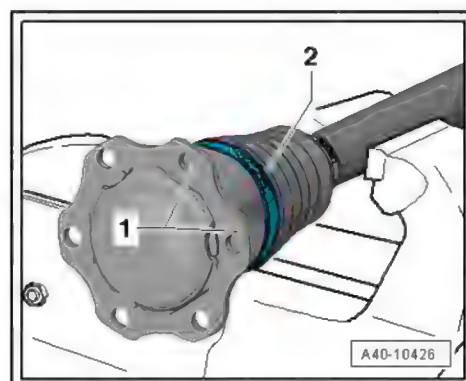
Use clamp tensioner - V.A.G 1682- to fit and tighten stainless steel clips, as shown in illustration.

- Ensure jaws of tool grip niches -arrows B- on crimping ear.
- Tighten clip by turning spindle with torque wrench -C- (take care to keep tool straight).
- ◆ Due to the hard material of the CV joint boot (as opposed to rubber), a stainless steel hose clip is required; this can only be tightened using clamp tensioner - V.A.G 1682- .
- ◆ Tightening torque: 20 Nm.
- ◆ Use torque wrench with 5...50 Nm adjustment range (e.g. - V.A.G 1331- ).
- ◆ Make sure thread of spindle on tool -A- turns freely. Lubricate with MoS<sub>2</sub> grease if necessary.
- ◆ If the thread is stiff (e.g. due to dirt), the required clamping force will not be attained at the hose clip when the specified tightening torque is applied.



Use locking pliers for Phaeton steering rack - VAS 6199- to fit and tighten O-type clips, as shown in illustration.

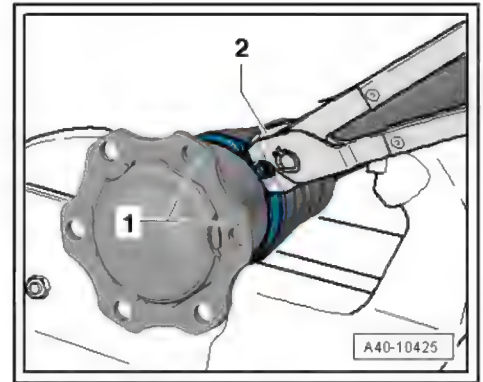
- To facilitate fitting of multi-point socket-head bolts when installing drive shaft, fastener lug -2- on hose clip must be positioned between mounting flanges -1- on joint body.







- Engage hose clip by hand at first lug.
- Close hose clip using locking pliers for Phaeton steering rack  
- VAS 6199- -2-.



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## 42 – Rear suspension

### 1 Rear axle

⇒ [“1.1 Overview - rear axle”, page 136](#)

#### 1.1 Overview - rear axle

##### Part I

I -  
⇒ [“2.1.1 Exploded view - sub-frame, front-wheel drive vehicles”, page 138](#)

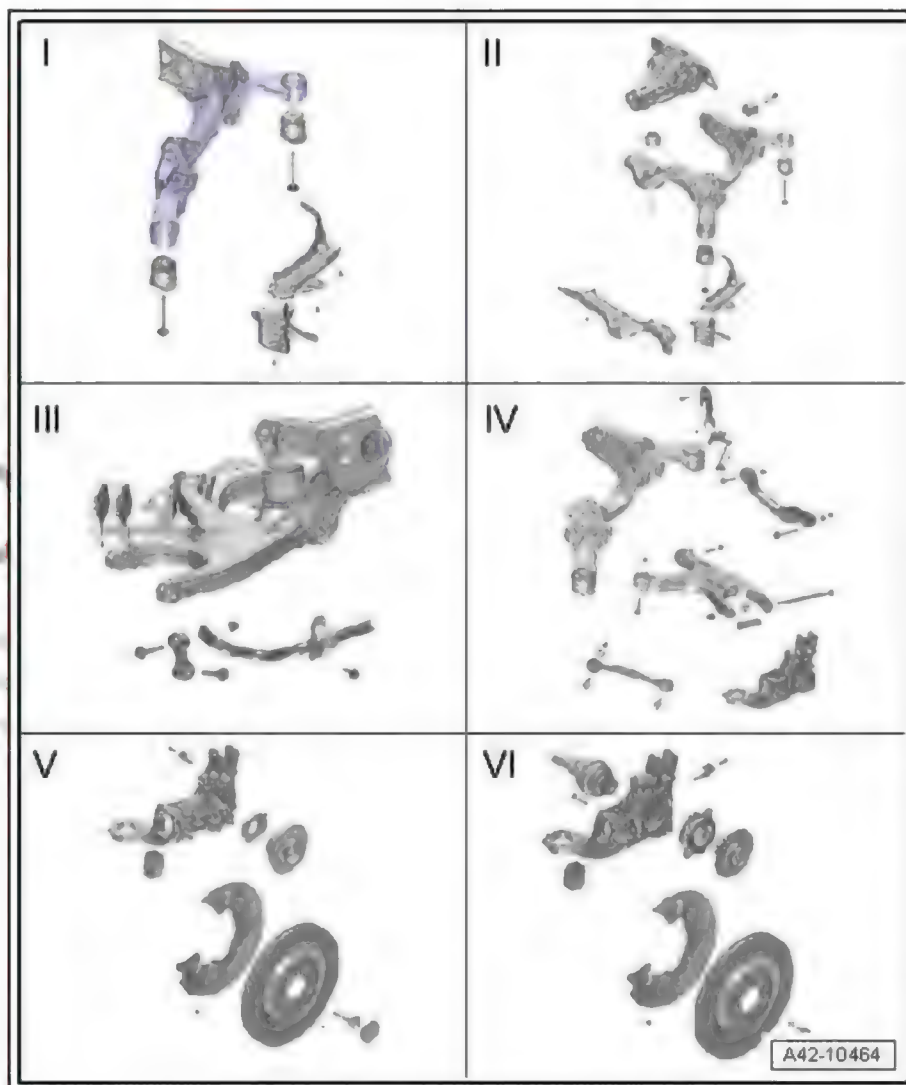
II -  
⇒ [“2.1.2 Exploded view - sub-frame, four-wheel drive vehicles”, page 140](#)

III -  
⇒ [“3.1 Exploded view - anti-roll bar”, page 200](#)

IV -  
⇒ [“4.1 Exploded view - transverse links”, page 203](#)

V -  
⇒ [“6.1.1 Exploded view - wheel bearing, front-wheel drive vehicles not including e-tron vehicles”, page 240](#)

VI -  
⇒ [“6.1.2 Exploded view - wheel bearing housing, four-wheel drive vehicles and e-tron vehicles”, page 242](#)



##### Part II





VII -

⇒ "5.1.1 Exploded view - suspension strut/shock absorber, coil spring", page 215

VIII -

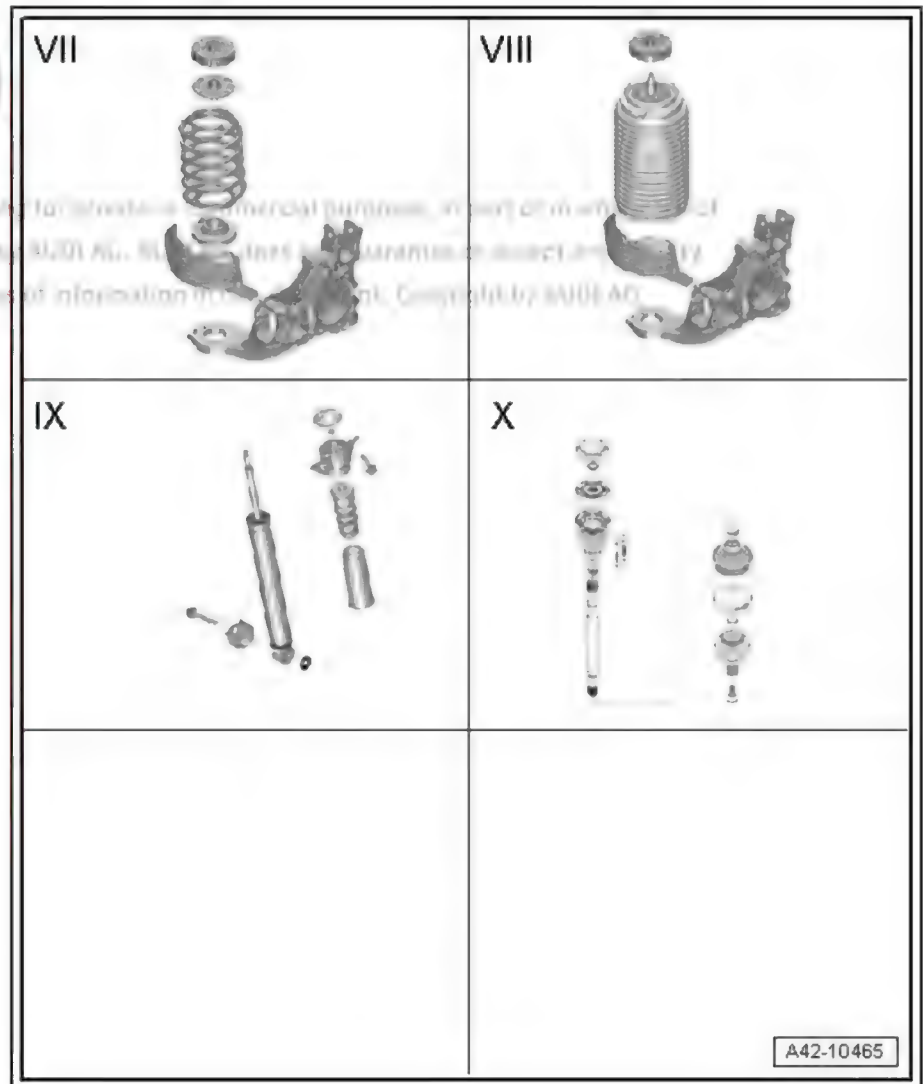
⇒ "5.1.2 Exploded view - suspension strut/shock absorber, air spring", page 217

IX -

⇒ "5.1.3 Exploded view - suspension strut/shock absorber, spring, shock absorber", page 218

X -

⇒ "7.1 Exploded view - drive shaft", page 267





## 2 Subframe

⇒ "2.1 Exploded view - subframe", page 138

⇒ "2.2 Fixing position of subframe", page 141

⇒ "2.3 Removing and installing subframe", page 146

⇒ "2.4 Servicing subframe", page 158

### 2.1 Exploded view - subframe

⇒ "2.1.1 Exploded view - subframe, front-wheel drive vehicles", page 138

⇒ "2.1.2 Exploded view - subframe, four-wheel drive vehicles", page 140

#### 2.1.1 Exploded view - subframe, front-wheel drive vehicles

##### 1 - Bolt

- ☐ 115 Nm +90°
- ☐ Always renew if removed

##### 2 - Bonded rubber bush (front)

- ☐ For subframe mounting
- ☐ Different versions  
⇒ page 139 ; for correct version refer to ⇒ Electronic parts catalogue
- ☐ Oil stains on a hydraulic bonded rubber bush are a sign of wear
- ☐ Renewing ⇒ page 158
- ☐ Renew on both sides

##### 3 - Spacer

- ☐ Different types depending on version; for correct type refer to ⇒ Electronic parts catalogue

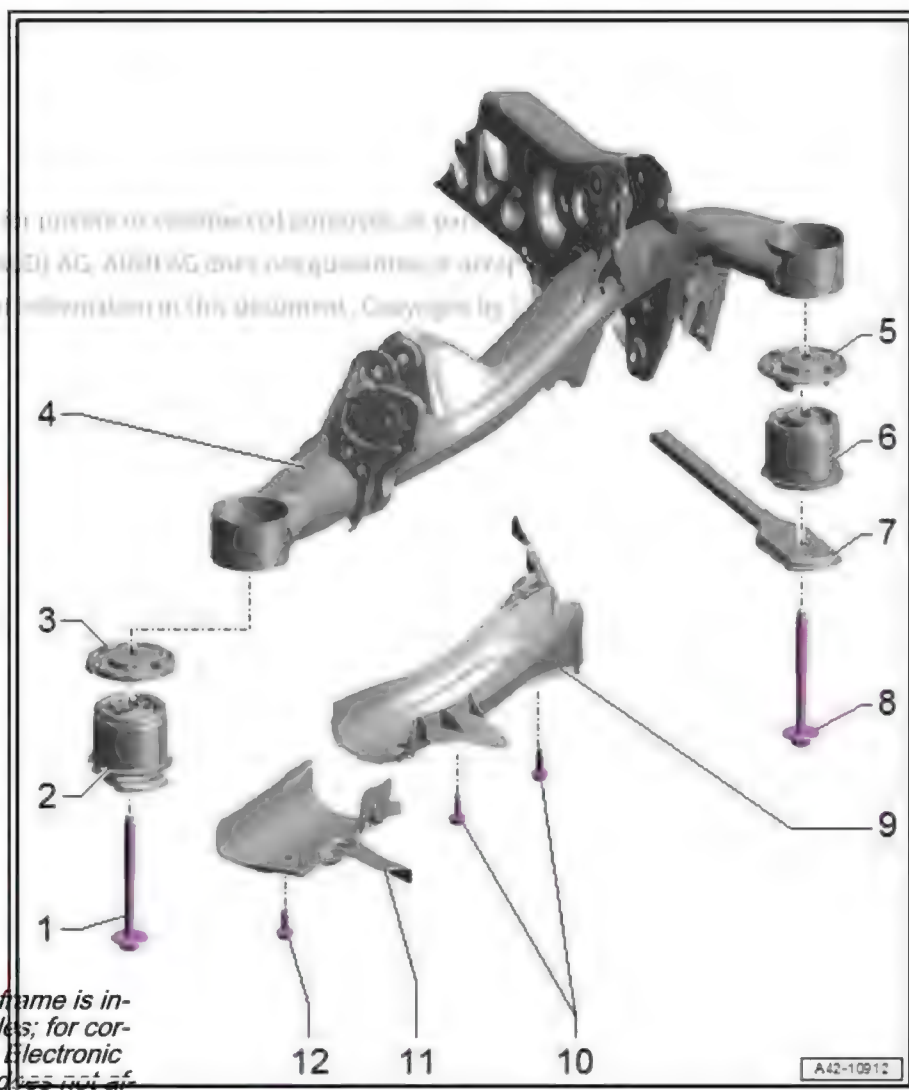
##### 4 - Subframe

- ☐ Removing and installing subframe with attachments ⇒ page 146
- ☐ Fixing position of subframe ⇒ page 141 .



Note

*A four-wheel drive subframe is installed on hybrid vehicles; for correct version refer to ⇒ Electronic parts catalogue . This does not affect repair work on the subframe.*



##### 5 - Spacer

- ☐ Different types depending on version; for correct type refer to ⇒ Electronic parts catalogue

##### 6 - Bonded rubber bush (rear)

- ☐ For subframe mounting





- ☐ Different versions ⇒ [page 139](#) ; for correct version refer to ⇒ Electronic parts catalogue
- ☐ Oil stains on a hydraulic bonded rubber bush are a sign of wear
- ☐ Renewing ⇒ [page 166](#)
- ☐ Renew on both sides

#### 7 - Brace

- ☐ Different types depending on version; for correct type refer to ⇒ Electronic parts catalogue

#### 8 - Bolt

- ☐ 115 Nm +90°
- ☐ Always renew if removed

#### 9 - Stone deflector (rear)

- ☐ Different types depending on version; for correct type refer to ⇒ Electronic parts catalogue

#### 10 - Clips

- ☐ Different types depending on version; for correct type refer to ⇒ Electronic parts catalogue

#### 11 - Stone deflector (front)

- ☐ Different types depending on version; for correct type refer to ⇒ Electronic parts catalogue

#### 12 - Clip

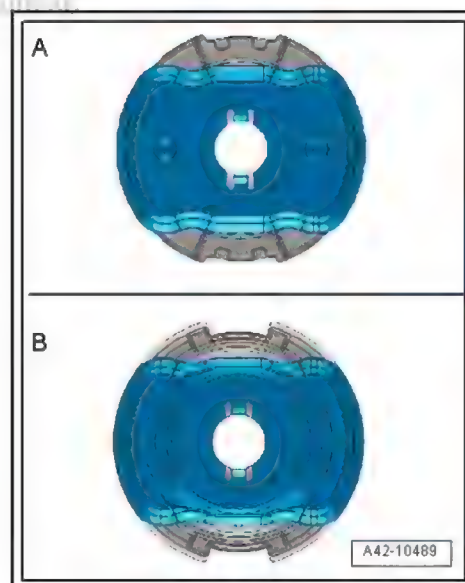
- ☐ Different types depending on version; for correct type refer to ⇒ Electronic parts catalogue

#### Bonded rubber bushes (front and rear)

A - Hydraulic bonded rubber bush

B - Conventional bonded rubber bush

Equipment version with brace: Without stop plate





## 2.1.2 Exploded view - subframe, four-wheel drive vehicles

### 1 - Clip

- ☐ Depending on version

### 2 - Stone deflector (centre)

- ☐ Depending on version

### 3 - Bolt

- ☐ 115 Nm + 90°
- ☐ Always renew if removed

### 4 - Bolt

- ☐ Tightening torque ⇒ Final drive; Rep. gr. 39 ; Final drive; Exploded view - final drive

### 5 - Subframe

- ☐ Removing and installing subframe with attachments ⇒ [page 151](#)
- ☐ Fixing position of subframe ⇒ [page 144](#) .

### 6 - Bonded rubber bush (front)

- ☐ For rear final drive mounting
- ☐ Renewing ⇒ [page 189](#)

### 7 - Rear final drive

- ☐ Removing and installing ⇒ Final drive; Rep. gr. 39 ; Final drive; Removing and installing final drive

### 8 - Bonded rubber bush (rear)

- ☐ For rear final drive mounting
- ☐ Renewing ⇒ [page 196](#)

### 9 - Bolt

- ☐ Tightening torque ⇒ Final drive; Rep. gr. 39 ; Final drive; Exploded view - final drive

### 10 - Bonded rubber bush (rear)

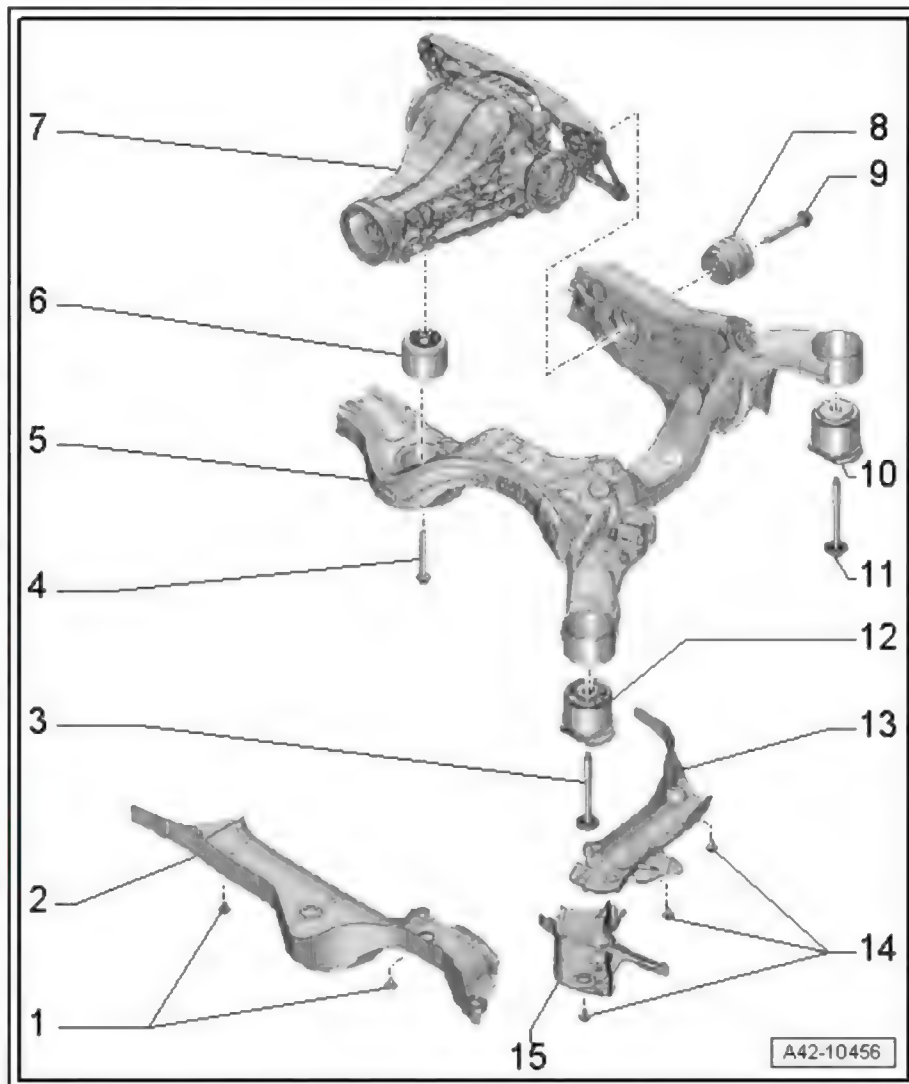
- ☐ For subframe mounting
- ☐ Different versions ⇒ [page 141](#) ; for correct version refer to ⇒ Electronic parts catalogue
- ☐ Oil stains on a hydraulic bonded rubber bush are a sign of wear
- ☐ Renewing ⇒ [page 182](#)
- ☐ Always renew on both sides

### 11 - Bolt

- ☐ 115 Nm + 90°
- ☐ Always renew if removed

### 12 - Bonded rubber bush (front)

- ☐ For subframe mounting
- ☐ Different versions ⇒ [page 141](#) ; for correct version refer to ⇒ Electronic parts catalogue
- ☐ Oil stains on a hydraulic bonded rubber bush are a sign of wear
- ☐ Renewing ⇒ [page 173](#)







- ☐ Always renew on both sides

#### 13 - Stone deflector (left-side)

- ☐ Depending on version

#### 14 - Clip

- ☐ Depending on version

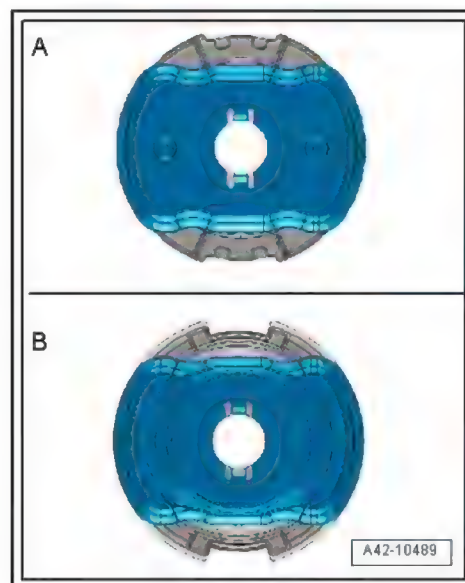
#### 15 - Stone deflector (front left)

- ☐ Depending on version

Bonded rubber bushes (front and rear)

A - Hydraulic bonded rubber bush

B - Conventional bonded rubber bush



## 2.2 Fixing position of subframe

⇒ ["2.2.1 Fixing position of subframe, front-wheel drive vehicles", page 141](#)

⇒ ["2.2.2 Fixing position of subframe, four-wheel drive vehicles", page 144](#)

### 2.2.1 Fixing position of subframe, front-wheel drive vehicles

Certain repairs require the removal of the subframe or the entire rear axle. The original position of the subframe relative to the body can be retained with the aid of the locating pins - T40242-. The locating pins - T40242- should always be screwed in just before lowering the subframe or the complete rear axle. Perform test drive after completing repair work. A wheel alignment check is required if the steering wheel has to be turned from the central position to stop the vehicle pulling to one side when driving in a straight line on a level surface ⇒ [page 330](#) .

Special tools and workshop equipment required



◆ Torque wrench - V.A.G 1331-



◆ Torque wrench - V.A.G 1332-



◆ Engine and gearbox jack - VAS 6931-

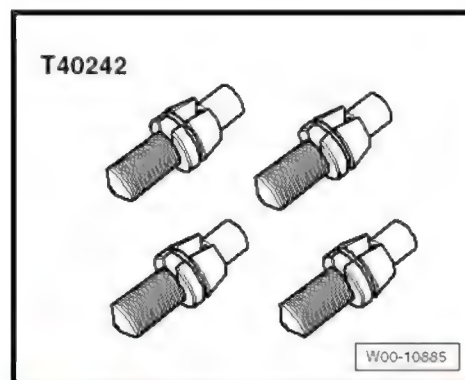


◆ Tensioning strap - T10038-



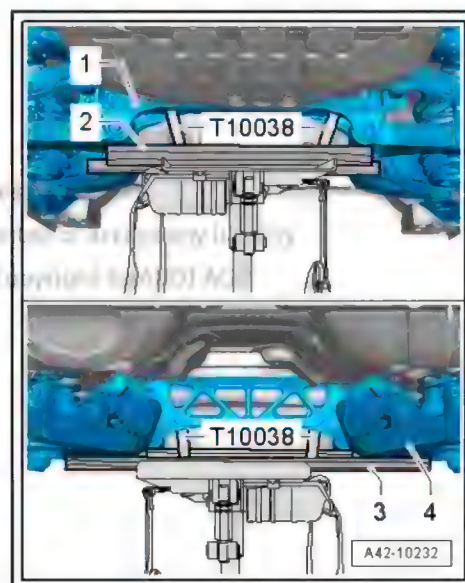


◆ Locating pins - T40242-

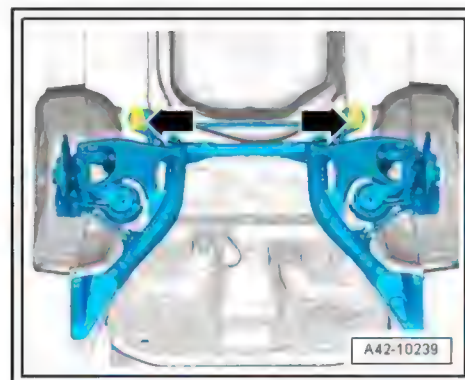


Procedure

- Remove rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers
- Place engine and gearbox jack - V.A.G 1383 A- under subframe.
- Support rear of subframe -1- with a suitable block of wood -2-.
- Support front of subframe -4- with a suitable block of wood -3-.
- Secure subframe with tensioning strap - T10038- on engine and gearbox jack - V.A.G 1383 A- as shown in illustration.



- Remove bolts -arrows-.
- Equipment version with brace: Remove brace.



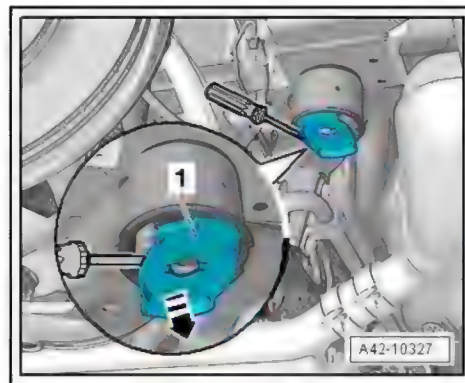


- Equipment version without brace: Pry stop plate -1- off hydraulic bonded rubber bush on alternate sides in area of retaining lugs.
- Screw in locating pins - T40242- and tighten to 20 Nm.
- The position of the subframe is now fixed.

Removal of locating pins - T40242- is performed in reverse sequence.

#### Tightening torques

- ◆ ⇒ ["2.1.1 Exploded view - subframe, front-wheel drive vehicles", page 138](#)
- ◆ ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers



## 2.2.2 Fixing position of subframe, four-wheel drive vehicles

Certain repairs require the removal of the subframe or the entire rear axle. The original position of the subframe relative to the body can be retained with the aid of the locating pins - T40242- . The locating pins - T40242- should always be screwed in just before lowering the subframe or the complete rear axle. Perform test drive after completing repair work. Wheel alignment must be checked and adjusted if the steering wheel is not straight  
⇒ [page 330](#) .

#### Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



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V.A.G 1331



W00-11166

- ◆ Torque wrench - V.A.G 1332-

V.A.G 1332



W00-11165



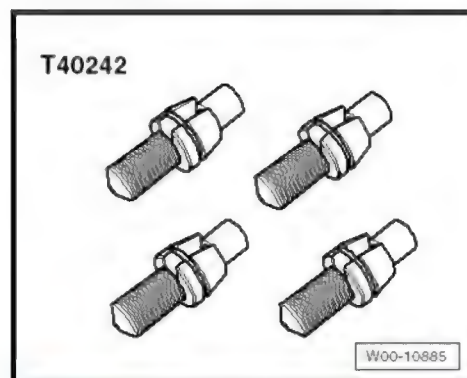
◆ Engine and gearbox jack - VAS 6931-



◆ Tensioning strap - T10038-

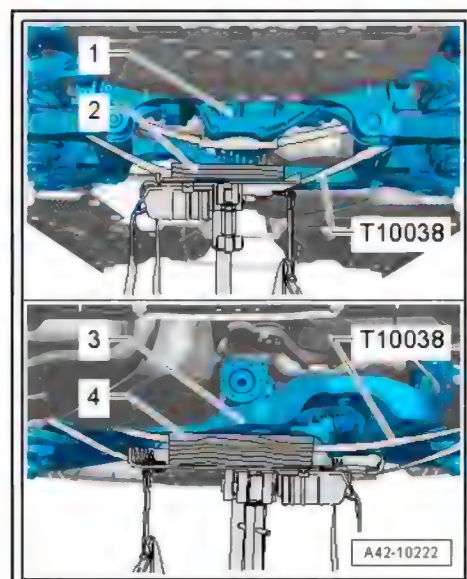


◆ Locating pins - T40242-



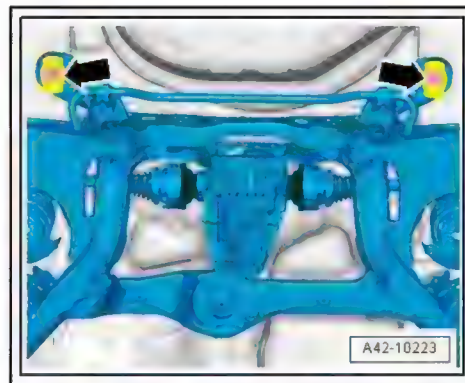
Procedure

- Place engine and gearbox jack - V.A.G 1383 A- under sub-frame.
- Support rear final drive -1- with a suitable block of wood -2-.
- Support front of subframe with a suitable block of wood -4- below cross member -3-.
- Secure subframe with tensioning strap - T10038- on engine and gearbox jack - V.A.G 1383 A- .
- Tie tensioning strap - T10038- around subframe roughly beneath drive shaft, feed strap past rear final drive and tighten as shown in illustration.



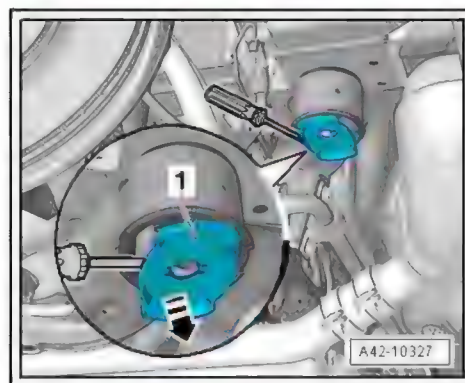


- Remove bolts -arrows-.



- Pry stop plate -1- off hydraulic bonded rubber bush on alternate sides in area of retaining lugs.
- Screw in locating pins - T40242- and tighten to 20 Nm.
- The position of the subframe is now fixed.

Removal of locating pins - T40242- is performed in reverse sequence.



## 2.3 Removing and installing subframe

⇒ ["2.3.1 Removing and installing subframe - front-wheel drive vehicles", page 146](#)

⇒ ["2.3.2 Removing and installing subframe - four-wheel drive vehicles", page 151](#)

### 2.3.1 Removing and installing subframe - front-wheel drive vehicles

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



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◆ Torque wrench - V.A.G 1332-



◆ Engine and gearbox jack - VAS 6931-



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◆ Tensioning strap - T10038-



◆ 2 blocks of wood

Removing

- Before starting work, measure distance from centre of wheel to lower edge of wheel housing  
⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#) or  
⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#) .

Applies to e-tron vehicles

**⚠ DANGER**

High voltage! Danger to life! Danger of severe or fatal injuries from electric shock.

- ◆ Observe safety precautions when working in the vicinity of high-voltage components ⇒ [page 5](#) .

Applies to all vehicles

- If the brake system has to be dismantled for subsequent repair work, note the following: Reset brake pistons ⇒ [Brake system](#);



Rep. gr. 46 ; Rear brakes; Removing and installing brake pads .

- Remove rear wheels ➔ [page 329](#) .
- Remove rear section of exhaust system ➔ Engine; Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .

Vehicles with coil springs:

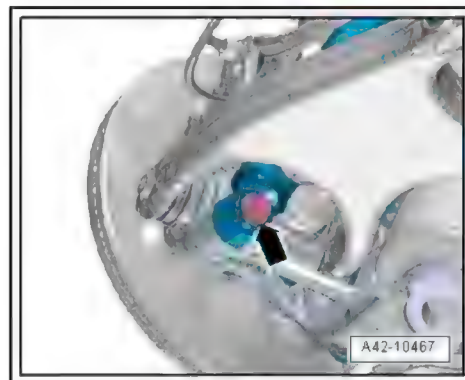
- Remove coil springs ➔ [page 230](#) .

Vehicles with air suspension:

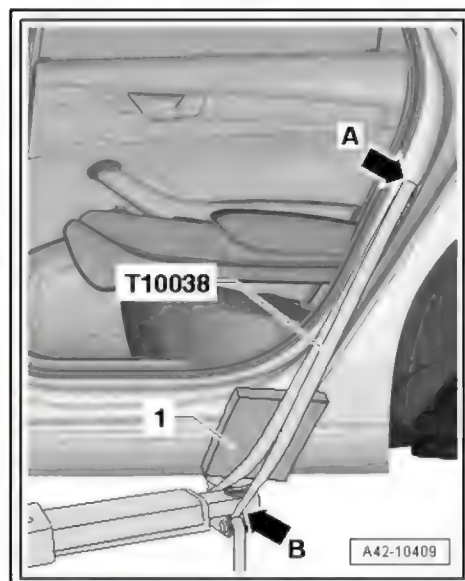
- Remove air springs ➔ [page 238](#) .

All vehicles (continued):

- Detach shock absorber from wheel bearing housing (both sides); to do this unscrew bolt -arrow- and remove washer between wheel bearing housing and shock absorber.



- Secure vehicle to arms of lifting platform -arrow B- by attaching tensioning strap - T10038- to striker -arrow A-.
- Place a piece of rubber foam -1- or similar between side member and tensioning strap - T10038- and tighten tensioning strap - T10038- .



Note

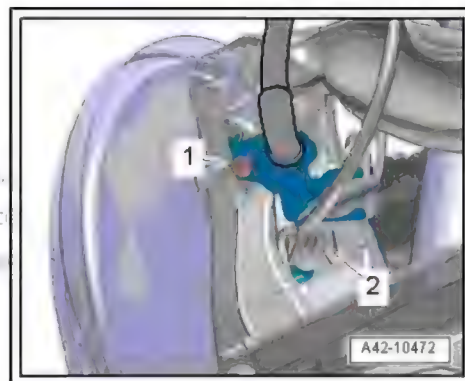
*Take care not to scratch side member.*



**CAUTION**

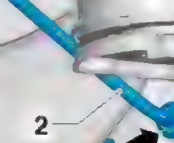
If vehicle is not secured, there is a risk of it slipping off the lifting platform.

- Release and unplug connector -2- from rear left speed sensor - G46- and rear right speed sensor - G44- .
- Remove bolt -1- on both sides and detach bracket with wiring from wheel bearing housing.



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- 
- A close-up photograph of the fuel line connection at the fuel filter. A black arrow points to the connection point where the fuel line (1) meets the fuel filter (2). The fuel filter is a cylindrical component with a cap. The fuel line is a black hose. The connection is secured with a blue plastic fitting. The fuel filter is labeled '2' and the fuel line is labeled '1'. A black arrow points to the connection point.

- 
- A photograph showing a cross-section of a concrete wall. Two vertical channels, labeled 1 and 2, are filled with a blue material. The channels are separated by a central vertical reinforcement bar. The wall is supported by a metal frame at the bottom.

- 

- 







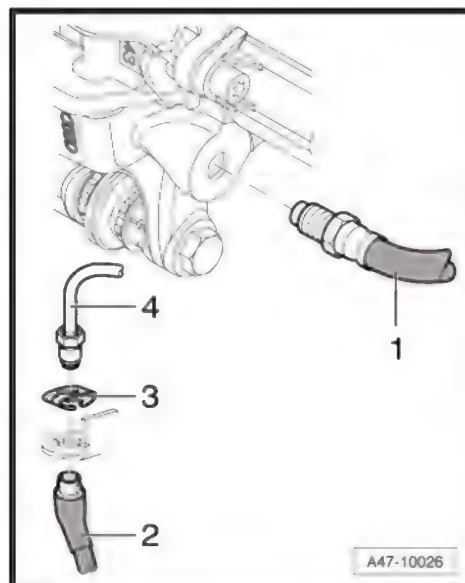
- Disconnect brake line -4- from brake hose -2- on both sides ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Exploded view - rear brake .



#### Note

Disregard item -1-.

- Fix position of subframe ⇒ [page 141](#) .



- Remove bolt -arrow- on both sides.
- Carefully lower subframe with attachments, taking care not to damage disconnected pipes and wiring.

#### Installing

Installation is carried out in reverse sequence. Note the following:



#### Note

- ♦ *Bonded rubber bushes can only be turned to a limited extent. The suspension mountings must therefore only be tightened when the suspension is in the unladen position or reference position.*
- ♦ *Raising suspension to unladen position (vehicles with coil springs) ⇒ [page 12](#)*
- ♦ *Raising suspension to reference position (vehicles with air suspension) ⇒ [page 15](#)*

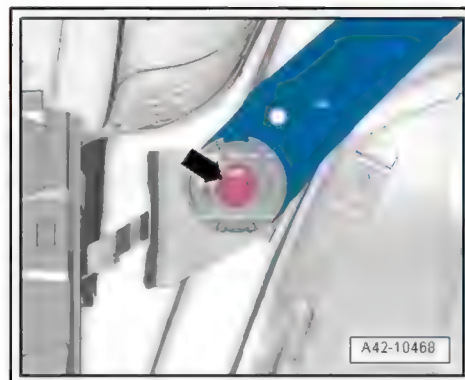


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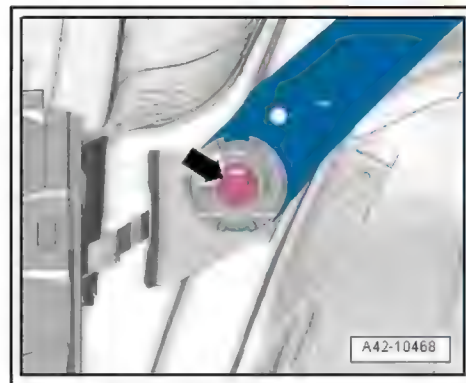


- Tighten bolt -arrow- on both sides.



#### Note

*Do not install coil springs or air springs until subframe bolts have been tightened to specified torque.*



- Remove locating pins - T40242- ➔ [page 144](#) .
- Install coil springs ➔ [page 230](#) or air springs ➔ [page 238](#) .
- Reconnect brake hose (both sides) ➔ Brake system; Rep. gr. 46 ; Rear brakes; Exploded view - rear brake .
- Secure shock absorbers ➔ [page 223](#) .
- Install underbody covers ➔ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim .
- If previously removed, install centre cover ➔ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim .
- Install diagonal struts (if previously fitted) ➔ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing diagonal struts .
- Install rear section of exhaust system ➔ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers
- Bleed brake system ➔ Brake system; Rep. gr. 47 ; Hydraulic system; Bleeding hydraulic system (normal bleeding procedure) .
- Fit rear wheels ➔ [page 329](#) .
- Check and adjust wheel alignment as required, see chart ➔ [page 344](#) .
- If the position of the subframe was not fixed prior to removal, the reference position must be re-adapted on vehicles with air suspension by starting the appropriate program on ➔ Vehicle diagnostic tester in [Guided Functions](#).
- If the vehicle level sender or the linkage for the vehicle level sender has been loosened during repair work, the reference position must be re-adapted on vehicles with air suspension by starting the appropriate program on ➔ Vehicle diagnostic tester in [Guided Functions](#).
- If the reference position has been re-adapted on vehicles with lane departure warning, the camera control unit - J852- must be recalibrated ➔ [page 365](#) .

#### Tightening torques

- ◆ ➔ ["2.1.1 Exploded view - subframe, front-wheel drive vehicles", page 138](#)

## 2.3.2 Removing and installing subframe - four-wheel drive vehicles

Special tools and workshop equipment required



◆ Torque wrench - V.A.G 1331-



◆ Torque wrench - V.A.G 1332-



◆ Engine and gearbox jack - VAS 6931-



◆ Tensioning strap - T10038-



## Removing

- Before starting work, measure distance from centre of wheel to lower edge of wheel housing  
⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#) or  
⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#) .





## Note

- ◆ *If the bolt securing the drive shaft to the wheel hub has to be slackened for subsequent operations, remember that this must be done with the vehicle standing on its wheels. Slacken bolt securing drive shaft to wheel hub ➔ [page 269](#).*
- ◆ *If the brake system has to be dismantled for subsequent repair work, note the following: Reset brake pistons ➔ Brake system; Rep. gr. 46 ; Rear brakes; Removing and installing brake pads .*
- Remove rear wheels ➔ [page 329](#) .
- Install diagonal struts (if previously fitted) ➔ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing diagonal struts .
- Remove rear section of exhaust system ➔ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers
- Disconnect propshaft from rear final drive and tie up ➔ Final drive; Rep. gr. 39 ; Propshaft; Detaching and attaching propshaft at rear final drive .

Vehicles with coil springs:

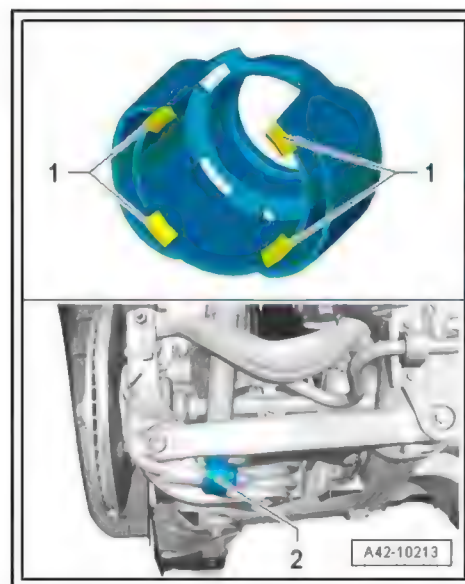
- Remove coil springs ➔ [page 230](#) .

Vehicles with air suspension:

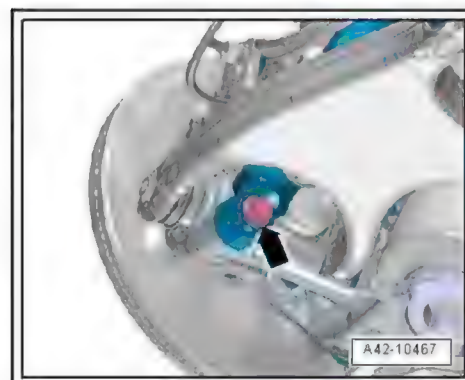
- Remove air springs ➔ [page 238](#) .

All vehicles (continued):

- Unclip retaining tabs -1- and detach stone deflector -2-.



- Detach shock absorber from wheel bearing housing (both sides); to do this unscrew bolt -arrow- and remove washer between wheel bearing housing and shock absorber.





- Secure vehicle to arms of lifting platform -arrow B- by attaching tensioning strap - T10038- to striker -arrow A-.
- Place a piece of rubber foam -1- or similar between side member and tensioning strap - T10038- and tighten tensioning strap - T10038- .



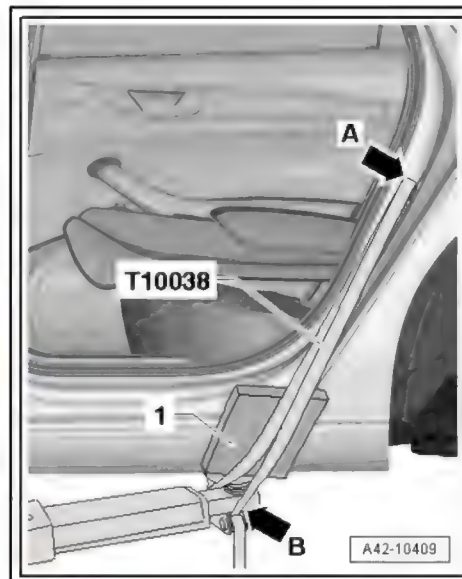
#### Note

Take care not to scratch side member.



#### CAUTION

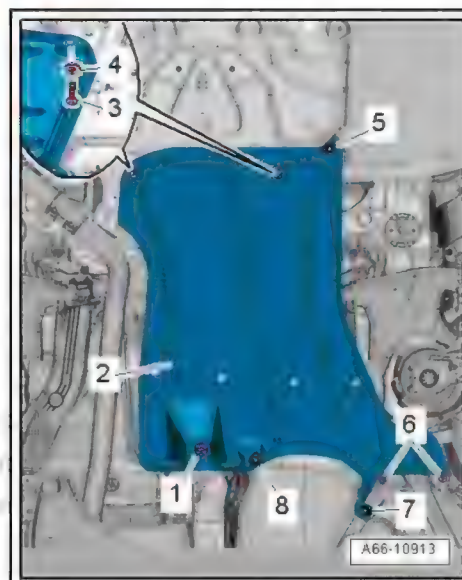
If vehicle is not secured, there is a risk of it slipping off the lifting platform.



- If fitted, remove centre cover -2- → General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .



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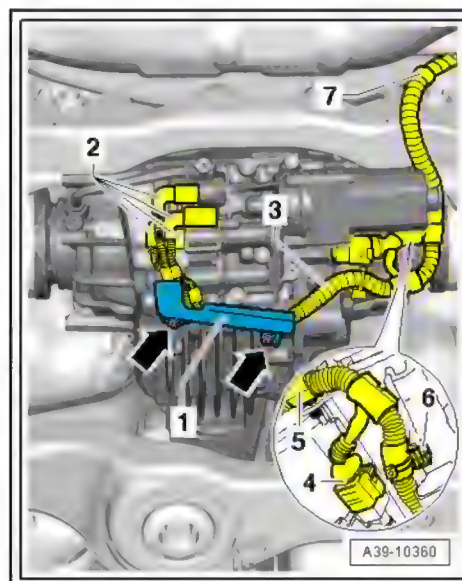
- On vehicles with sport differential, remove bolts -arrows- and detach bracket -1- from rear final drive.



#### Note

To facilitate installation, mark electrical connectors -2- for oil pressure and oil temperature senders and at clutch valves.

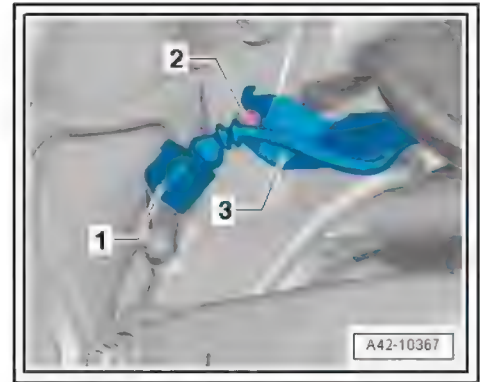
- Unplug electrical connectors -2- from oil pressure and oil temperature senders and clutch valves.
- Then unplug connector -4- from four-wheel drive pump - V415- .
- Now unclip wiring harness -3- from final drive and subframe -items 5...7- and tie up.







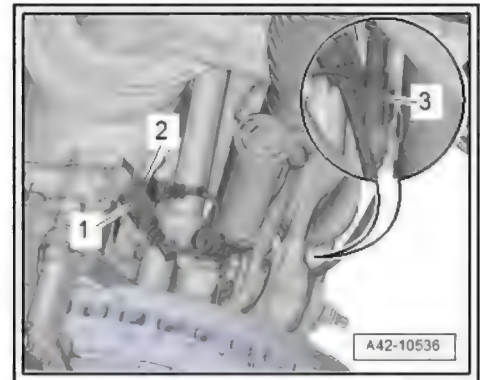
- Release and unplug connector -1- from rear left speed sensor - G46- and rear right speed sensor - G44- .
- Move electrical wiring clear.
- Remove bolt -2- on both sides and move clear bracket -3- on subframe.



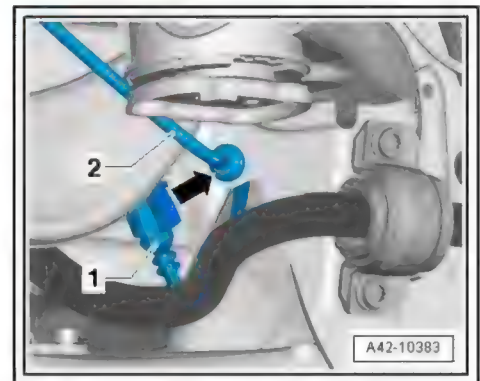
- Unplug electrical connectors on both sides:

- 1 - For brake pad wear sender (rear)
- 2 - For parking brake motor
- 3 - For DRC system (Audi RS 6)

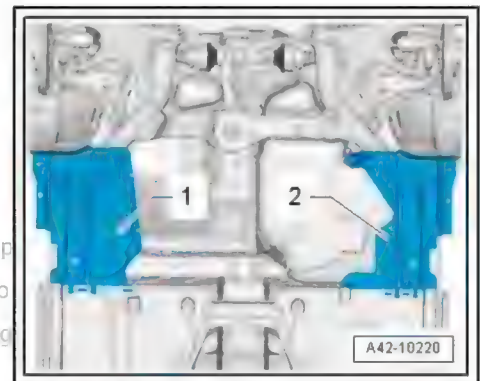
- Move electrical wiring clear.



- Release and unplug electrical connector -1- for rear left vehicle level sender - G76- and rear right vehicle level sender - G77- .
- Move wiring harness -2- clear -arrow-.



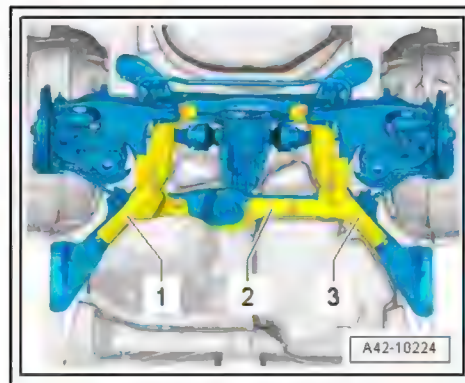
- Remove underbody covers -1- and -2- ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .
- Remove diagonal struts (if fitted) ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing diagonal struts .



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- If fitted, remove stone deflectors -1, 2 and 3-.



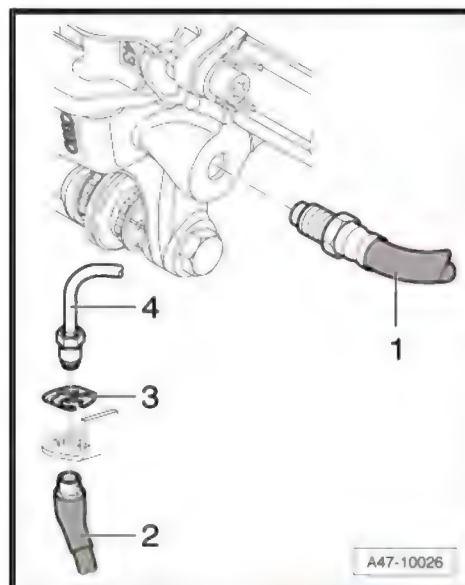
- Disconnect brake line -4- from brake hose -2- on both sides ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Exploded view - rear brake .



#### Note

Disregard item -1-.

- Fix position of subframe ⇒ [page 144](#) .



- Remove bolt -arrow- on both sides.
- Carefully lower subframe with attachments, taking care not to damage disconnected pipes and wiring.

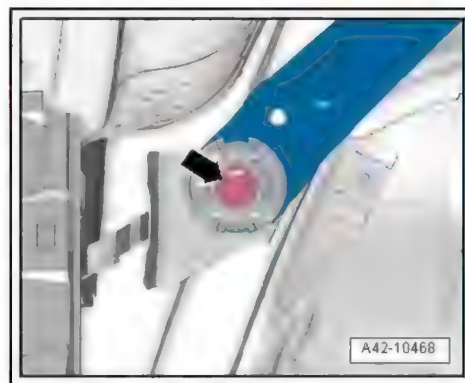
#### Installing

Installation is carried out in reverse sequence. Note the following:



#### Note

- ◆ Bonded rubber bushes can only be turned to a limited extent. The suspension mountings must therefore only be tightened when the suspension is in the unladen position or reference position.
- ◆ Raising suspension to unladen position (vehicles with coil springs) ⇒ [page 12](#)
- ◆ Raising suspension to reference position (vehicles with air suspension) ⇒ [page 15](#)





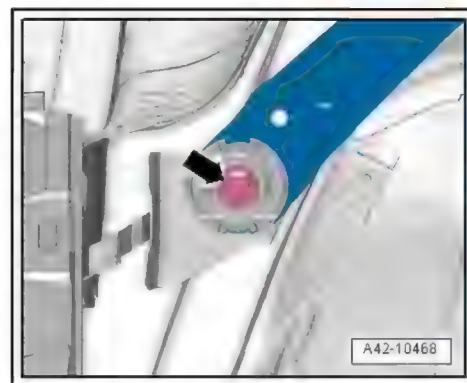


- Tighten bolt -arrow- on both sides.



#### Note

*Do not install coil springs or air springs until subframe bolts have been tightened to specified torque.*



- Remove locating pins - T40242- ➔ [page 144](#) .
- Install coil springs ➔ [page 230](#) or air springs ➔ [page 238](#) .
- Reconnect brake hose (both sides) ➔ Brake system; Rep. gr. 46 ; Rear brakes; Exploded view - rear brake .
- Install shock absorber ➔ [page 223](#) .
- Secure propshaft at rear final drive ➔ Final drive; Rep. gr. 39 ; Propshaft; Detaching and attaching propshaft at rear final drive .
- Install underbody covers ➔ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim .
- If previously removed, install centre cover ➔ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim .
- Install rear section of exhaust system ➔ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers
- Bleed brake system ➔ Brake system; Rep. gr. 47 ; Hydraulic system; Bleeding hydraulic system (normal bleeding procedure) .
- Fit rear wheels ➔ [page 329](#) .
- Wheel alignment check may be required (perform road test) ➔ [page 141](#) .
- If the position of the subframe was not fixed prior to removal, the reference position must be re-adapted on vehicles with air suspension by starting the appropriate program on ➔ Vehicle diagnostic tester in [Guided Functions](#).
- If the vehicle level sender or the linkage for the vehicle level sender has been loosened during repair work, the reference position must be re-adapted on vehicles with air suspension by starting the appropriate program on ➔ Vehicle diagnostic tester in [Guided Functions](#).
- If the reference position has been re-adapted on vehicles with lane departure warning, the camera control unit - J852- must be recalibrated ➔ [page 365](#) .

#### Tightening torques

- ◆ ➔ ["2.1.2 Exploded view - subframe, four-wheel drive vehicles", page 140](#)



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## 2.4 Servicing subframe

⇒ ["2.4.1 Renewing subframe bushes \(front\), front-wheel drive vehicles", page 158](#)

⇒ ["2.4.2 Renewing subframe bushes \(rear\), front-wheel drive vehicles", page 166](#)

⇒ ["2.4.3 Renewing subframe bushes \(front\), four-wheel drive vehicles", page 173](#)

⇒ ["2.4.4 Renewing subframe bushes \(rear\), four-wheel drive vehicles", page 182](#)

⇒ ["2.4.5 Renewing bonded rubber bush \(front\) for rear final drive, four-wheel drive vehicles", page 189](#)

⇒ ["2.4.6 Renewing bonded rubber bush \(rear\) for rear final drive, four-wheel drive vehicles", page 196](#)

### 2.4.1 Renewing subframe bushes (front), front-wheel drive vehicles

Special tools and workshop equipment required

◆ Assembly tool - 3301-



◆ Torque wrench - V.A.G 1332-



◆ Engine and gearbox jack - VAS 6931-







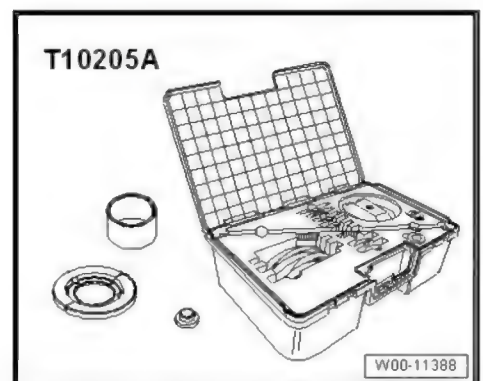
◆ Hydraulic cylinder - VAS 6178-



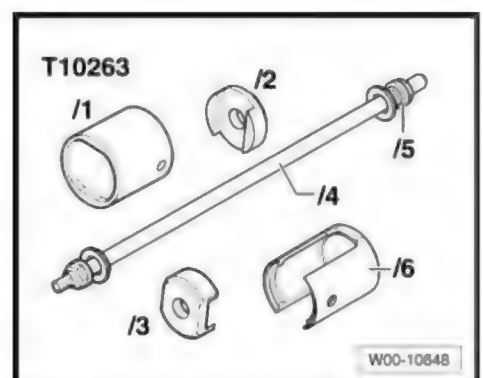
◆ Foot pump - VAS 6179-



◆ Assembly tool - T10205A-



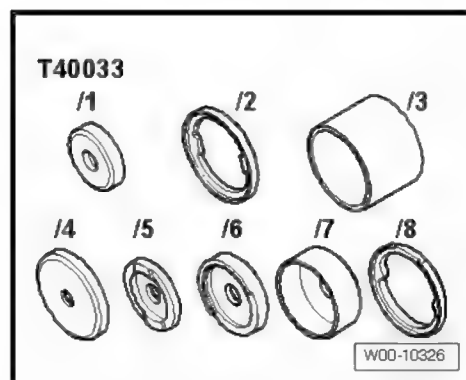
◆ Assembly tool - T10263-



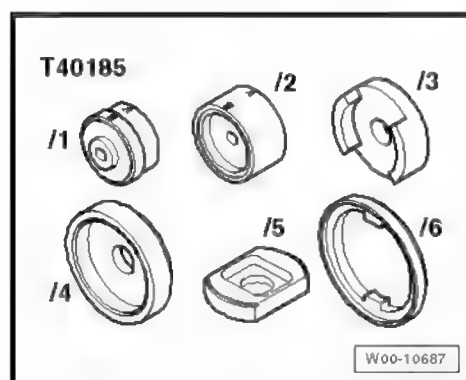




◆ Assembly tool - T40033-



◆ Assembly tool - T40185-



◆ Assembly tool - T40253-







## Removing



### Note

- ◆ *If a bonded rubber bush on one side is defective, the bush on the other side must be renewed at the same time. For correct version refer to ⇒ [Electronic parts catalogue](#) .*
- ◆ *Also check the other bushes before renewing a defective bonded rubber bush.*
- ◆ *If cracks, oil stains or other damage is visible, these bonded rubber bushes must also be renewed.*
- ◆ *There are different versions of the bonded rubber bushes; for correct version refer to ⇒ [Electronic parts catalogue](#) .*
- ◆ *The front part of the subframe is lowered in order to renew the bonded rubber bushes. The subframe does not have to be removed.*
- ◆ *Do not lower the subframe more than 4 cm on one side.*
- ◆ *Mark the position of the bonded rubber bushes in relation to the subframe before removing them.*
- Remove rear wheels ⇒ [page 329](#) .
- Remove rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers

Vehicles with coil springs:

- Remove coil springs ⇒ [page 230](#) .

Vehicles with air suspension:

- Bleed air springs of rear axle ⇒ [page 284](#) .

All vehicles (continued):

- Secure vehicle to arms of lifting platform -arrow B- by attaching tensioning strap - T10038- to striker -arrow A-.
- Place a piece of rubber foam -1- or similar between side member and tensioning strap - T10038- and tighten tensioning strap - T10038- .

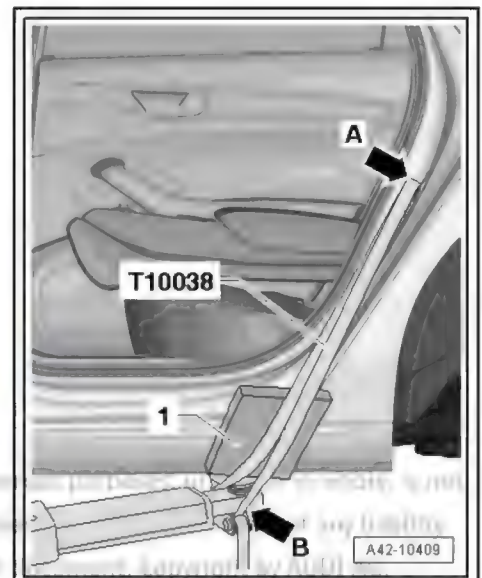


### Note

*Take care not to scratch side member.*

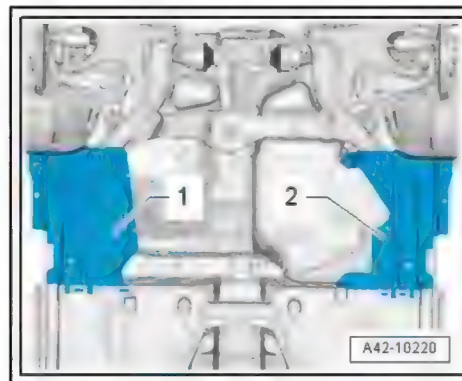
## CAUTION

If vehicle is not secured, there is a risk of it slipping off the lifting platform.

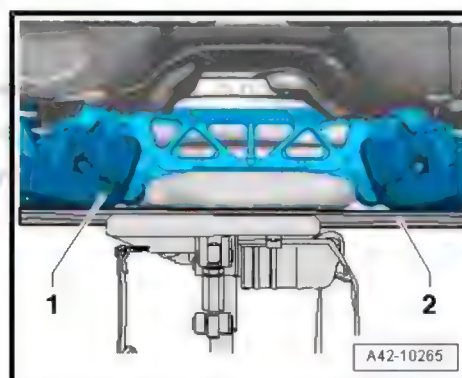




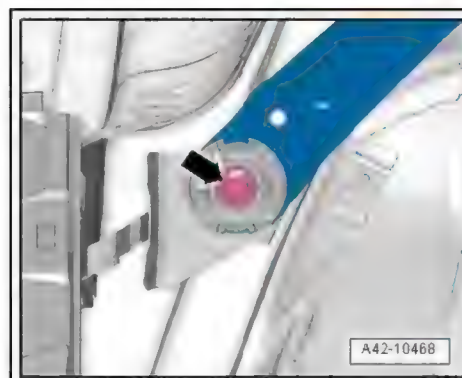
- Remove underbody covers -1- and -2- ➔ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .



- Place engine and gearbox jack - V.A.G 1383 A- under sub-frame -1-.
- Support subframe with a suitable block of wood -2-.



- Remove bolt -arrow- on both sides.



- Using assembly tool - 3301- and nut -T40253/1- , as shown in illustration, screw spindle -T40253- approx. 1.5 cm into body on side opposite bonded rubber bush to be renewed.

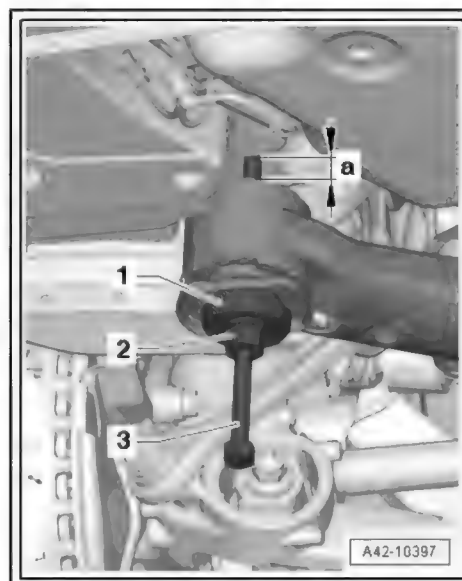
- 1 - Assembly tool - 3301-
- 2 - Nut -T40253/1-
- 3 - Spindle -T40253-



#### Note

*Screw nut -T40253/1- onto spindle -T40253- until distance -a- reaches 4 cm.*

- Lower subframe not more than 4 cm.







Applies to hydraulic bonded rubber bush:

- Lift out plastic stop -1-, as shown in illustration.



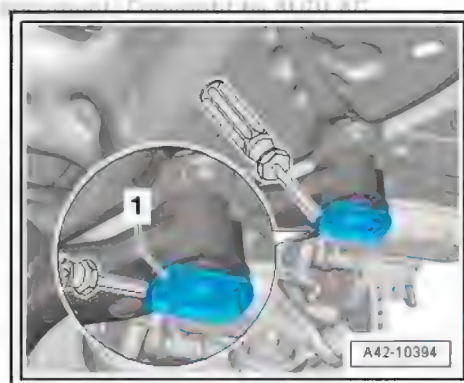
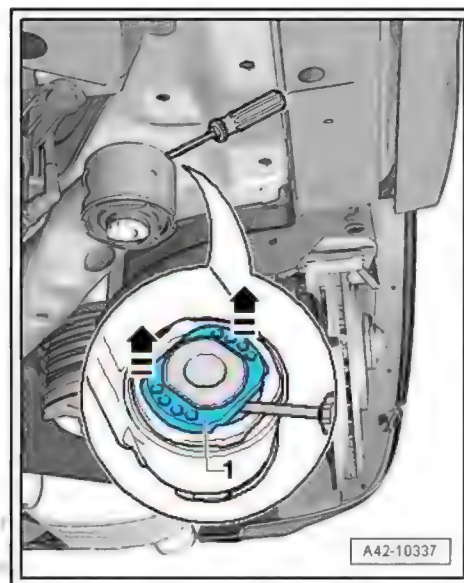
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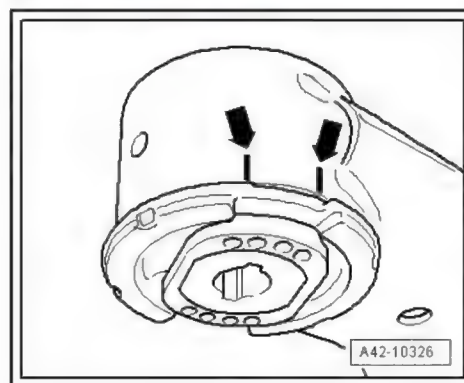
with respect to the correctness of information for private customer

Applies to all versions:

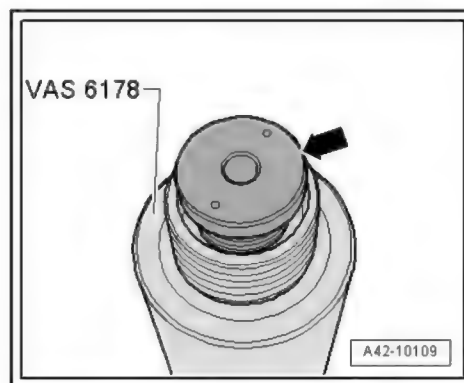
- Pry stop plate -1- off bonded rubber bush on alternate sides in area of retaining lugs.



- To facilitate installation, mark position of bonded rubber bush or hydraulic bonded rubber bush in relation to subframe -arrows- using a felt-tip pen or similar.



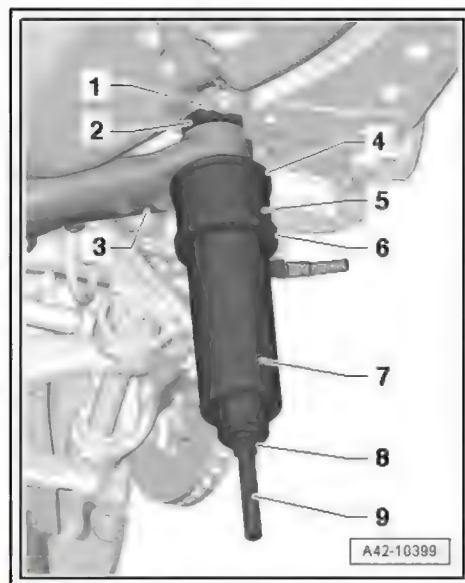
- If necessary, unscrew small-diameter support -arrow- from hydraulic cylinder - VAS 6178- and screw in support - T10205/13- in its place.





– Apply special tools to front bonded rubber bush as shown in illustration.

- 1 - Nut - T10263/5-
- 2 - Thrust piece - T40185/5- Recess faces towards bonded rubber bush.
- 3 - Subframe
- 4 - Support ring - T40185/6- Tapered end faces upwards and projections engage in recesses in bonded rubber bush.
- 5 - Tube - T40033/3-
- 6 - Support ring - T10205/4-
- 7 - Hydraulic cylinder - VAS 6178-
- 8 - Nut - T10263/5-
- 9 - Spindle - T10263/4- . Pin on end of spindle faces downwards.



### CAUTION

Hold hydraulic cylinder - VAS 6178- securely during pressing operation.

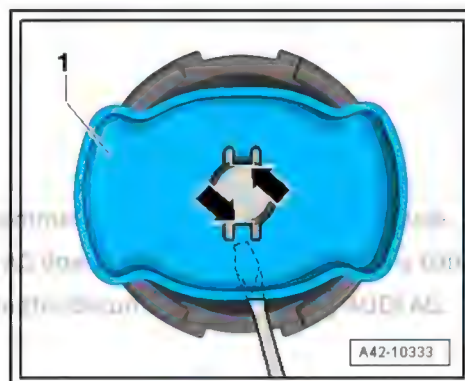
The bonded rubber bush will come loose suddenly. Injuries can be caused if the tools and the bonded rubber bush are allowed to drop.

### Installing

- Before installing bonded rubber bush, pry stop plate -1- off bonded rubber bush on alternate sides in area of retaining lugs -arrows-.

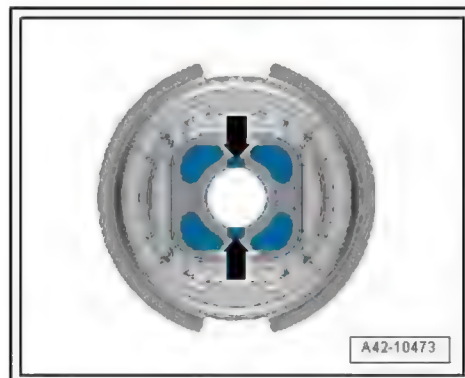


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Installation position of conventional bonded rubber bush:

- Grooves -arrows- are in line with direction of travel.

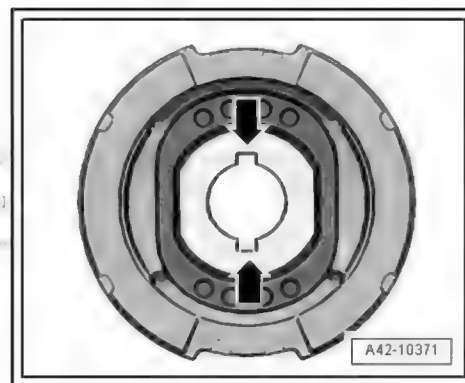






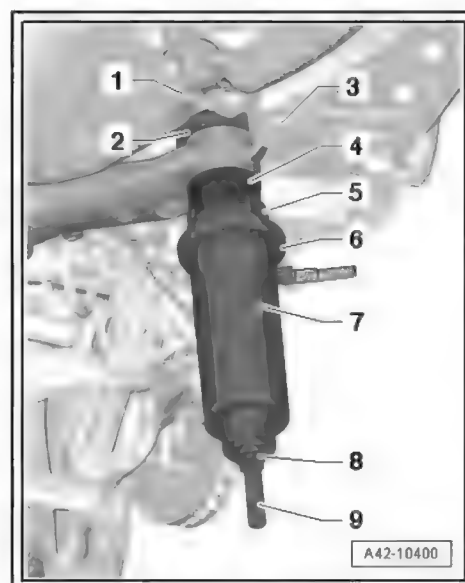
Installation position of hydraulic bonded rubber bush:

- Grooves -arrows- are in line with direction of travel.



- Apply special tools to front bonded rubber bush as shown in illustration.

- 1 - Nut - T10263/5-
  - 2 - Thrust piece - T40185/4-
  - 3 - Subframe
  - 4 - Bonded rubber bush
  - 5 - Thrust piece - T40185/3-
  - 6 - Support ring - T10205/4-
  - 7 - Hydraulic cylinder - VAS 6178-
  - 8 - Nut - T10263/5-
  - 9 - Spindle - T10263/4- . Pin on end of spindle faces downwards.
- Align bonded rubber bush with markings made earlier and press in at the correct position until collar is flush with subframe bushing.



#### Note

- ◆ *If necessary, slacken cylinder and then press home again.*
- ◆ *Ensure that the bonded rubber bush remains straight during the first stage of installation; otherwise the outer ring may be damaged.*



- Ends of rubber beads on bonded rubber bush must align with markings -arrows- made earlier on subframe.



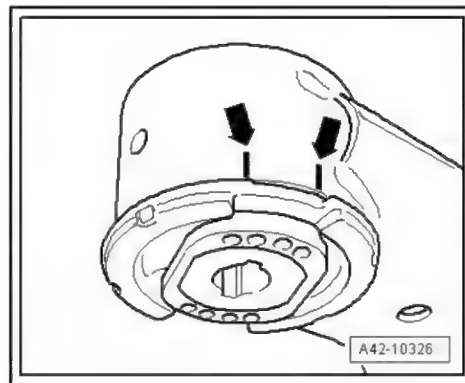
#### Note

*After renewing the bushes, make good any paint damage on the subframe with anti-corrosion coating, primer and black topcoat.*

- Fit stop plate on bonded rubber bush.

The remaining installation steps are carried out in the reverse sequence. Note the following:

- Install coil springs ⇒ [page 230](#) .
- Install underbody covers ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim .
- Fit rear wheels ⇒ [page 329](#) .
- Install rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers
- Charge air springs of rear axle ⇒ [page 284](#) .



## 2.4.2 Renewing subframe bushes (rear), front-wheel drive vehicles

Special tools and workshop equipment required

- ◆ Assembly tool - 3301-



- ◆ Assembly tool - 3346-



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◆ Torque wrench - V.A.G 1332-



◆ Engine and gearbox jack - VAS 6931-



◆ Hydraulic cylinder - VAS 6178-



◆ Foot pump - VAS 6179-

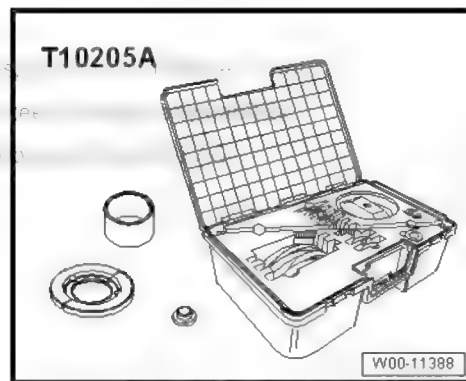


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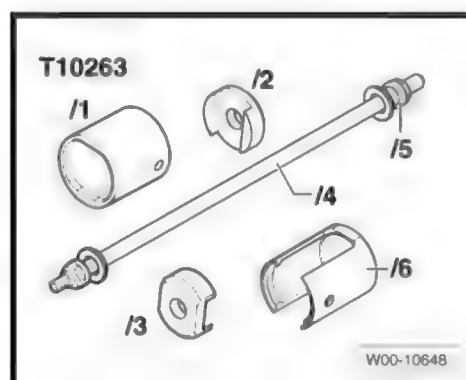




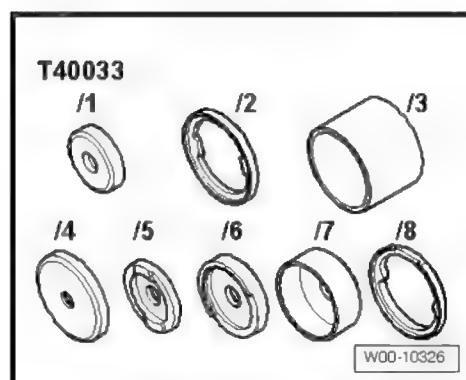
◆ Assembly tool - T10205A-



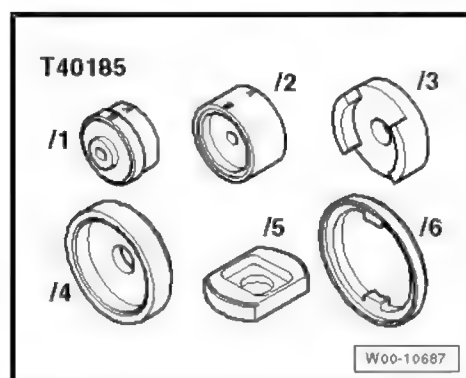
◆ Assembly tool - T10263-



◆ Assembly tool - T40033-



◆ Assembly tool - T40185-







## Removing



### Note

- ◆ *Also check the other bushes before renewing a defective bonded rubber bush.*
- ◆ *If cracks, oil stains or other damage is visible, these bonded rubber bushes must also be renewed.*
- ◆ *The rear part of the subframe is lowered in order to renew the bonded rubber bushes. The subframe does not have to be removed.*
- ◆ *Do not lower the subframe more than 4 cm on one side.*
- ◆ *Mark the position of the bonded rubber bushes in relation to the subframe before removing them.*
- Remove rear section of exhaust system ➔ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers
- Secure vehicle to arms of lifting platform -arrow B- by attaching tensioning strap - T10038- to striker -arrow A-.
- Place a piece of rubber foam -1- or similar between side member and tensioning strap ➔ T10038- and tighten tensioning strap - T10038-.



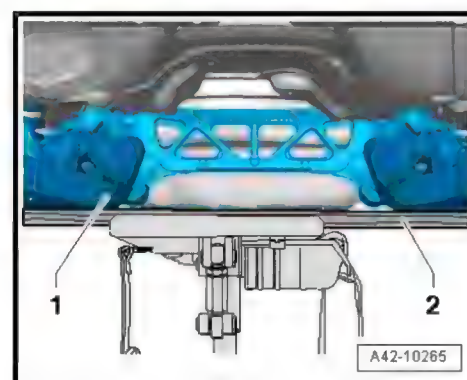
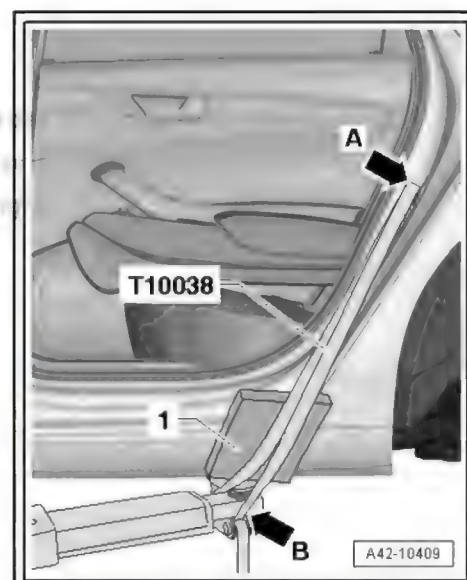
### Note

*Take care not to scratch side member.*

## CAUTION

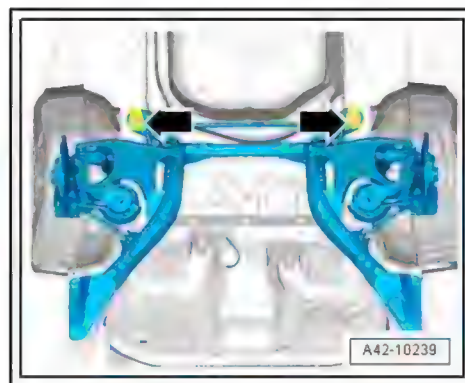
If vehicle is not secured, there is a risk of it slipping off the lifting platform.

- Remove rear wheels ➔ [page 329](#) .
- Place engine and gearbox jack - V.A.G 1383 A- under subframe -1-.
- Support subframe with a suitable block of wood -2-.





- Remove bolts -arrows-.
- Equipment version with brace: Remove brace.



- Using assembly tool - 3301- and nut -3346/3- , as shown in illustration, screw spindle -3346/2- approx. 1.5 cm into body on side opposite bonded rubber bush to be renewed.

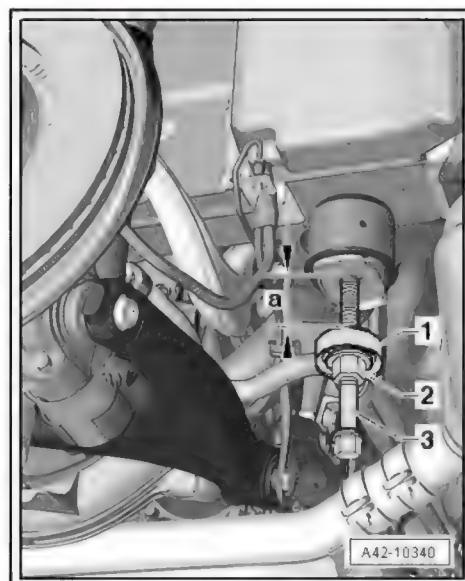
- 1 - Assembly tool - 3301-
- 2 - Nut -3346/3-
- 3 - Spindle -3346/2-



**Note**

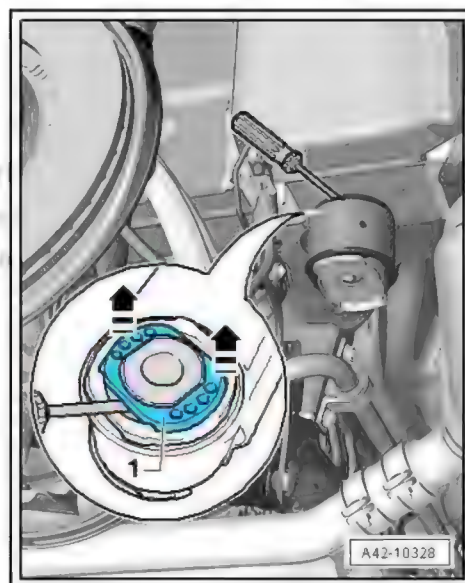
*Screw nut -3346/3- onto spindle -3346/2- until distance -a- reaches 4 cm.*

- Lower subframe not more than 4 cm.



Applies to hydraulic bonded rubber bush:

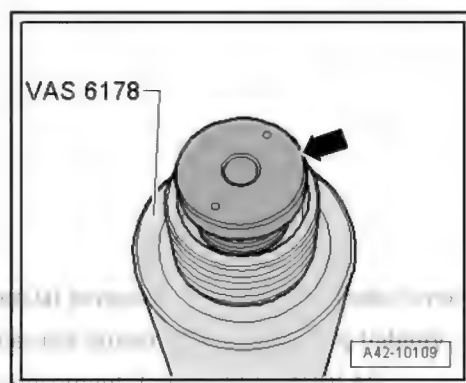
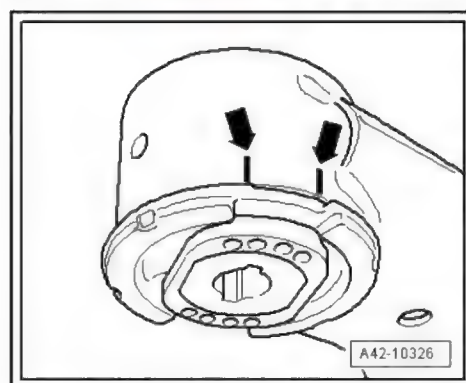
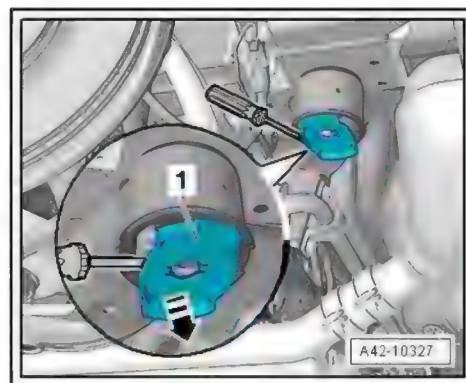
- Prise plastic stop -1- upwards off bonded rubber bush.





Applies to all versions:

- Equipment version without brace: Pry stop plate -1- off bonded rubber bush on alternate sides in area of retaining lugs.
- To facilitate installation, mark position of hydraulic bonded rubber bush in relation to subframe -arrows- using a felt-tip pen or similar.
- If necessary, unscrew small-diameter support -arrow- from hydraulic cylinder - VAS 6178- and screw in support - T10205/13- in its place.

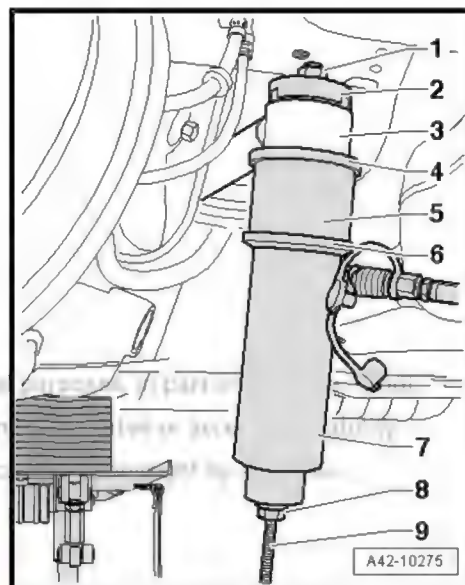


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With respect to the correctness of information in this document.



- Apply special tools to front bonded rubber bush as shown in illustration.

- 1 - Nut - T10263/5-
- 2 - Thrust piece - T40185/5- Recess faces towards bonded rubber bush.
- 3 - Subframe
- 4 - Support ring - T40185/6- Tapered end faces upwards and projections engage in recesses in bonded rubber bush.
- 5 - Tube - T40033/3-
- 6 - Support ring - T10205/4-
- 7 - Hydraulic cylinder - VAS 6178-
- 8 - Nut - T10263/5-
- 9 - Spindle - T10263/4- . Pin on end of spindle faces downwards.



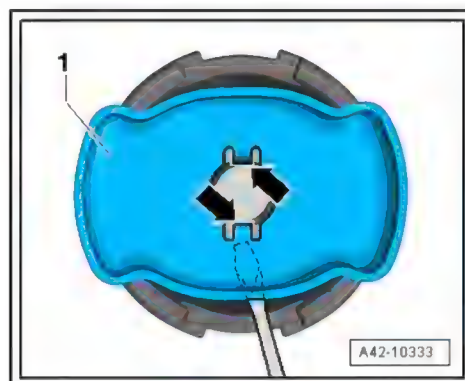
### CAUTION

Hold hydraulic cylinder - VAS 6178- securely during pressing operation.

The bonded rubber bush will come loose suddenly. Injuries can be caused if the tools and the bonded rubber bush are allowed to drop.

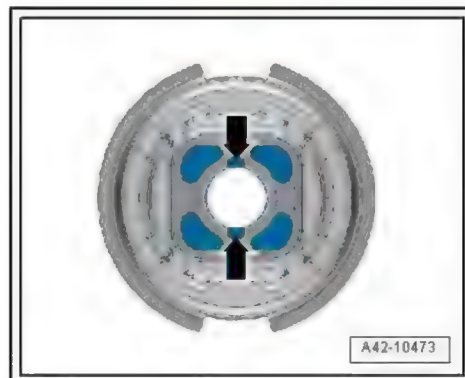
### Installing

- Equipment version without brace: Before installing bonded rubber bush, pry stop plate -1- off bonded rubber bush on alternate sides in area of retaining lugs -arrows-.



Installation position of conventional bonded rubber bush:

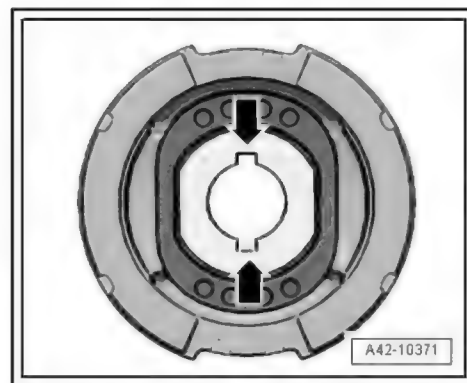
- Grooves -arrows- are in line with direction of travel.





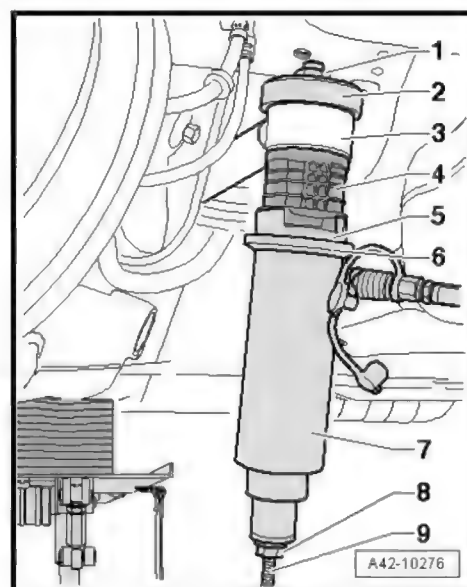
Installation position of hydraulic bonded rubber bush:

- Grooves -arrows- are in line with direction of travel.



- Apply special tools to rear bonded rubber bush as shown in illustration.

- 1 - Nut - T10263/5-
  - 2 - Thrust piece - T40185/4-
  - 3 - Subframe
  - 4 - Conventional or hydraulic bonded rubber bush
  - 5 - Thrust piece - T40185/3-
  - 6 - Support ring - T10205/4-
  - 7 - Hydraulic cylinder - VAS 6178-
  - 8 - Nut - T10263/5-
  - 9 - Spindle - T10263/4- . Pin on end of spindle faces downwards.
- Align bonded rubber bush with markings made earlier and press in at the correct position until collar is flush with subframe bushing. If necessary, slacken cylinder and then press home again. Ensure that the bonded rubber bush remains straight during the first stage of installation, otherwise the outer ring may be damaged.



- Ends of rubber beads on bonded rubber bush must align with markings -arrows- made earlier on subframe.



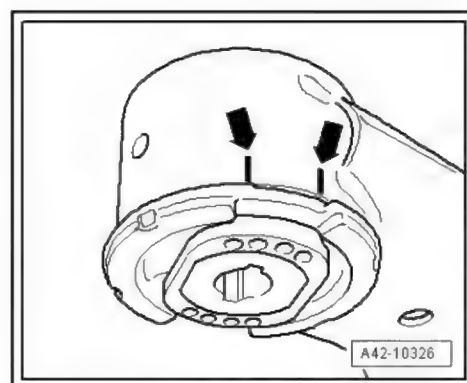
#### Note

*After renewing the bushes, make good any paint damage on the subframe with anti-corrosion coating, primer and black topcoat.*

- Fit stop plate on bonded rubber bush.

The remaining installation steps are carried out in the reverse sequence. Note the following:

- Fit rear wheels ➔ [page 329](#) .
- Install rear section of exhaust system ➔ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers



### 2.4.3 Renewing subframe bushes (front), four-wheel drive vehicles

Special tools and workshop equipment required



◆ Assembly tool - 3301-



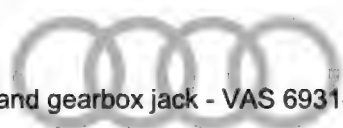
◆ Assembly tool - 3346-



◆ Torque wrench - V.A.G 1332-



◆ Engine and gearbox jack - VAS 6931-



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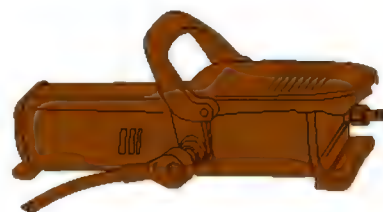


**VAS 6178**



W00-11694

**VAS 6179**



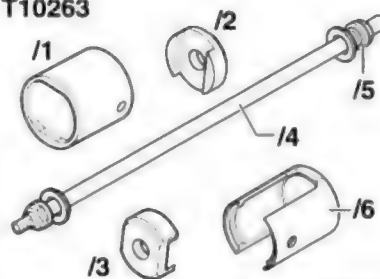
W00-11695

**T10205A**



W00-11388

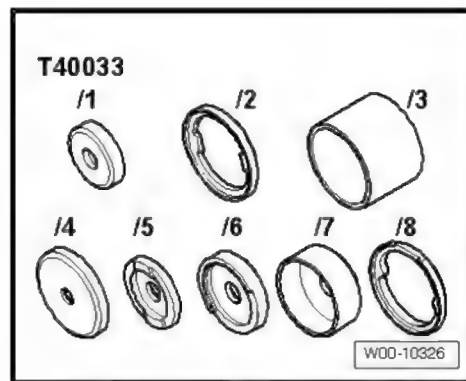
**T10263**



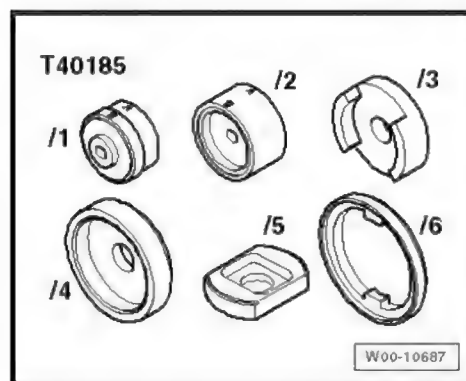
W00-10648



◆ Assembly tool - T40033-



◆ Assembly tool - T40185-



Removing



Note

- ◆ If a bonded rubber bush on one side is defective, the bush on the other side must be renewed at the same time. For correct version refer to ⇒ *Electronic parts catalogue* .
- ◆ Also check the other bushes before renewing a defective bonded rubber bush.
- ◆ If cracks, oil stains or other damage is visible, these bonded rubber bushes must also be renewed.
- ◆ There are different versions of the bonded rubber bushes; for correct version refer to ⇒ *Electronic parts catalogue* .

- Remove rear wheels ⇒ [page 329](#) .

Vehicles with coil springs:

- Remove coil springs ⇒ [page 230](#) .

Vehicles with air suspension:

- Bleed air springs of rear axle ⇒ [page 284](#) .

All vehicles (continued):

- Remove diagonal struts (if fitted) ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing diagonal struts .



**i** Note

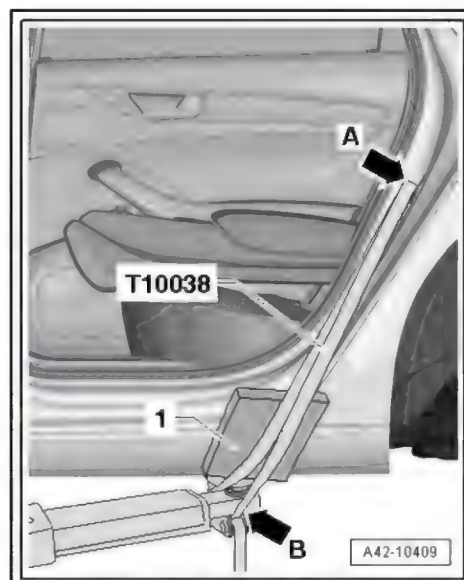
- ◆ *The front part of the subframe is lowered in order to renew the bonded rubber bushes. The subframe does not have to be removed.*
- ◆ *Do not lower the subframe more than 4 cm.*
- ◆ *Mark the position of the bonded rubber bushes in relation to the subframe before removing them.*
- Secure vehicle to arms of lifting platform -arrow B- by attaching tensioning strap - T10038- to striker -arrow A-.
- Place a piece of rubber foam -1- or similar between side member and tensioning strap - T10038- and tighten tensioning strap - T10038- .

**i** Note

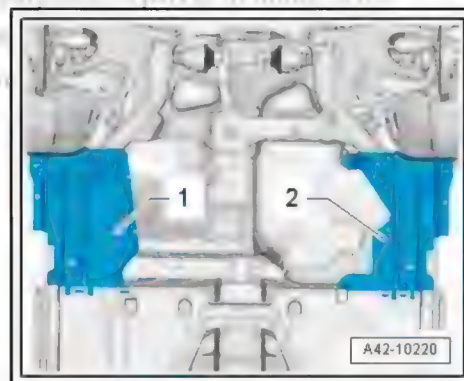
*Take care not to scratch side member.*

**! CAUTION**

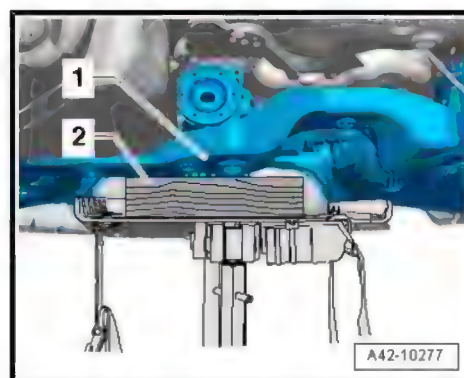
If vehicle is not secured, there is a risk of it slipping off the lifting platform.



- Remove underbody covers -1- and -2- ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim.



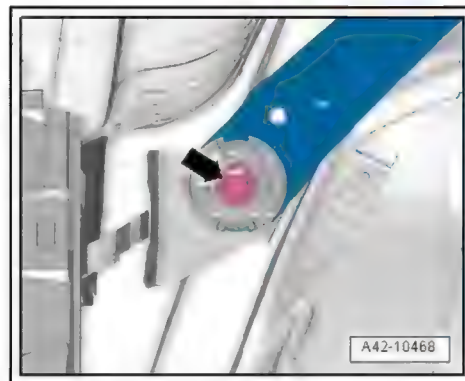
- Place engine and gearbox jack - V.A.G 1383 A- under subframe -1-.
- Insert a suitable block of wood -2- under subframe -1-.







- Remove bolt -arrow- on both sides.



- Using assembly tool - 3301- and nut -T40253/1-, as shown in illustration, screw spindle -T40253- approx. 1.5 cm into body on side opposite bonded rubber bush to be renewed.

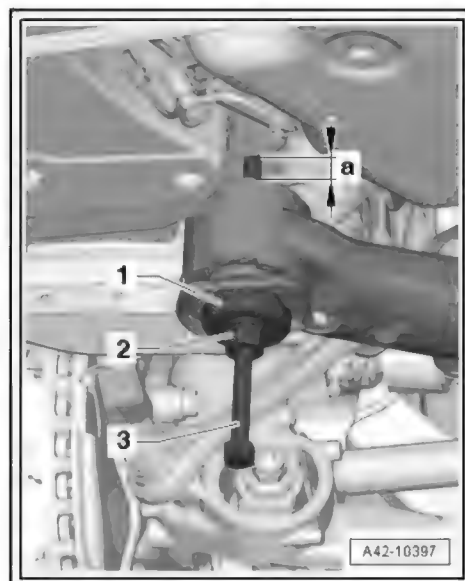
- 1 - Assembly tool - 3301-
- 2 - Nut -T40253/1-
- 3 - Spindle -T40253-



Note

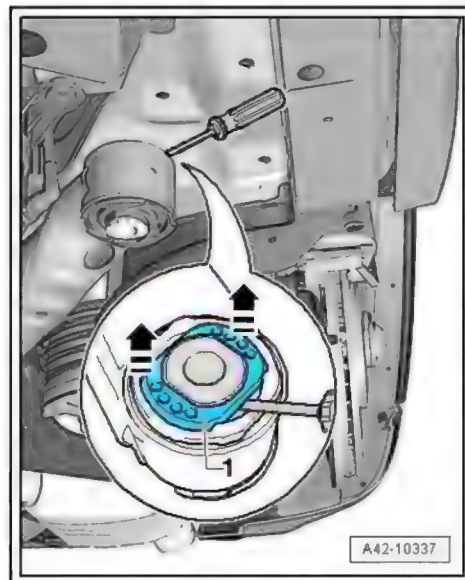
*Screw nut -T40253/1- onto spindle -T40253- until distance -a- reaches 4 cm.*

- Lower subframe not more than 4 cm.



Applies to hydraulic bonded rubber bush:

- Lift out plastic stop -1-, as shown in illustration.



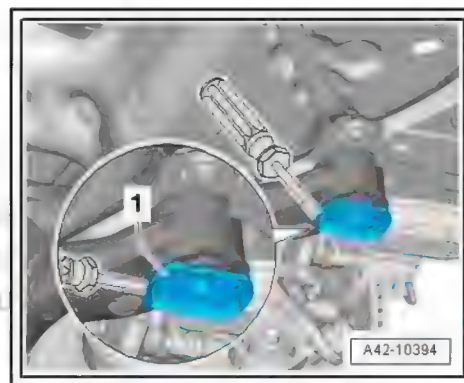
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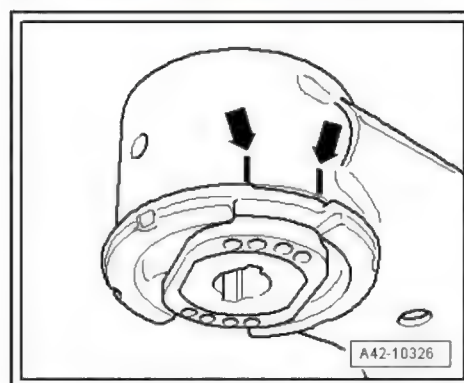


Applies to all versions:

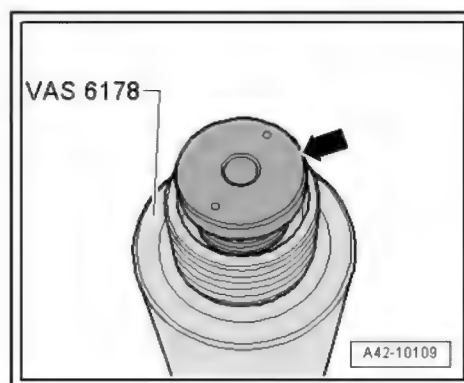
- Pry stop plate -1- off bonded rubber bush on alternate sides in area of retaining lugs.



- To facilitate installation, mark position of bonded rubber bush or hydraulic bonded rubber bush in relation to subframe -arrows- using a felt-tip pen or similar.



- If necessary, unscrew small-diameter support -arrow- from hydraulic cylinder - VAS 6178- and screw in support - T10205/13- in its place.





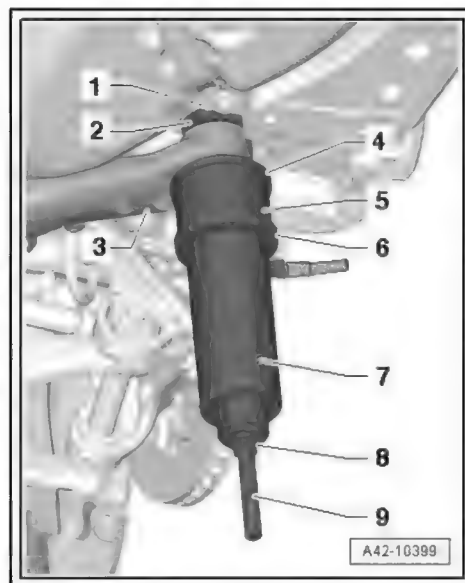
– Apply special tools to front bonded rubber bush as shown in illustration.

- 1 - Nut - T10263/5-
- 2 - Thrust piece - T40185/5- Recess faces towards bonded rubber bush.
- 3 - Subframe
- 4 - Support ring - T40185/6- Tapered end faces upwards and projections engage in recesses in bonded rubber bush.
- 5 - Tube - T40033/3-
- 6 - Support ring - T10205/4-
- 7 - Hydraulic cylinder - VAS 6178-
- 8 - Nut - T10263/5-
- 9 - Spindle - T10263/4- . Pin on end of spindle faces downwards.

### NOTICE

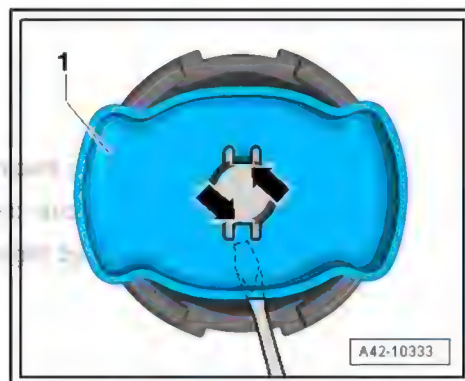
Hold hydraulic cylinder - VAS 6178- securely during pressing operation.

The bonded rubber bush will come loose suddenly. Injuries can be caused if the tools and the bonded rubber bush are allowed to drop.



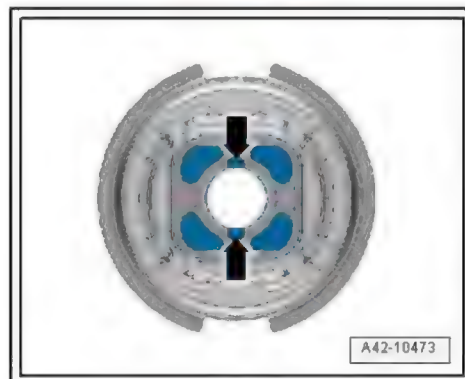
### Installing

- Before installing bonded rubber bush, pry stop plate -1- off bonded rubber bush on alternate sides in area of retaining lugs -arrows-.



Installation position of conventional bonded rubber bush:

- Grooves -arrows- are in line with direction of travel.

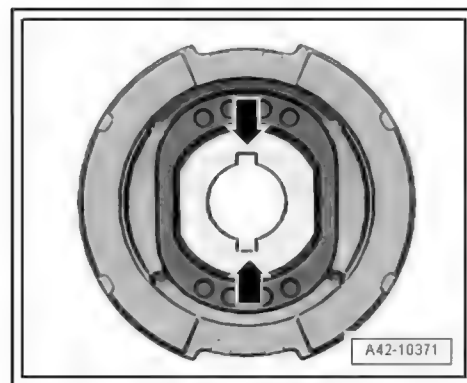






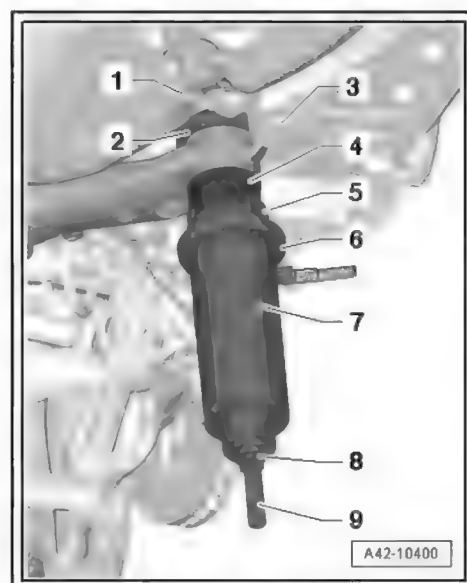
Installation position of hydraulic bonded rubber bush:

- Grooves -arrows- are in line with direction of travel.



- Apply special tools to front bonded rubber bush as shown in illustration.

- 1 - Nut - T10263/5-
  - 2 - Thrust piece - T40185/4-
  - 3 - Subframe
  - 4 - Bonded rubber bush
  - 5 - Thrust piece - T40185/3-
  - 6 - Support ring - T10205/4-
  - 7 - Hydraulic cylinder - VAS 6178-
  - 8 - Nut - T10263/5-
  - 9 - Spindle - T10263/4- . Pin on end of spindle faces downwards.
- Align bonded rubber bush with markings made earlier and press in at the correct position until collar is flush with subframe bushing.



#### Note

- ◆ If necessary, slacken cylinder and then press home again.
- ◆ Ensure that the bonded rubber bush remains straight during the first stage of installation; otherwise the outer ring may be damaged.



- Ends of rubber beads on bonded rubber bush must align with markings -arrows- made earlier on subframe.



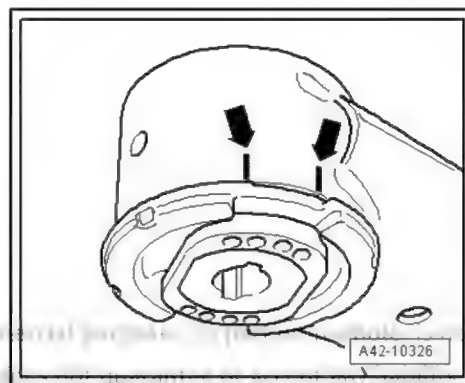
#### Note

*After renewing the bushes, make good any paint damage on the subframe with anti-corrosion coating, primer and black topcoat.*

- Fit stop plate on bonded rubber bush.

The remaining installation steps are carried out in the reverse sequence. Note the following:

- Install diagonal struts (if previously fitted) ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing diagonal struts .
- Install coil springs ⇒ [page 230](#) .
- Install underbody covers ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim .
- Fit rear wheels ⇒ [page 329](#) .
- Charge air springs of rear axle ⇒ [page 284](#) .



## 2.4.4 Renewing subframe bushes (rear), four-wheel drive vehicles

Special tools and workshop equipment required

- ◆ Assembly tool - 3301-



- ◆ Assembly tool - 3346-







◆ Torque wrench - V.A.G 1332-



◆ Engine and gearbox jack - VAS 6931-



◆ Hydraulic cylinder - VAS 6178-



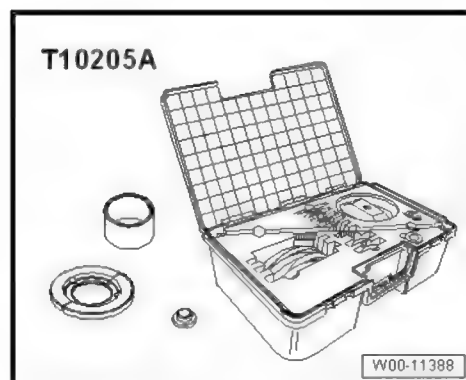
◆ Foot pump - VAS 6179-



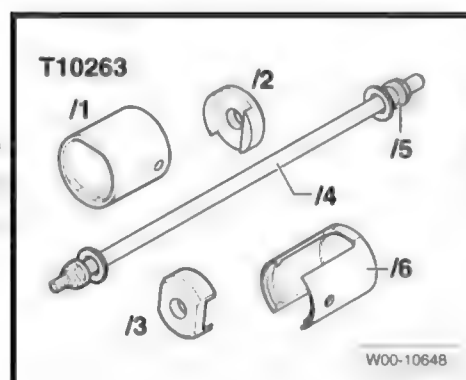




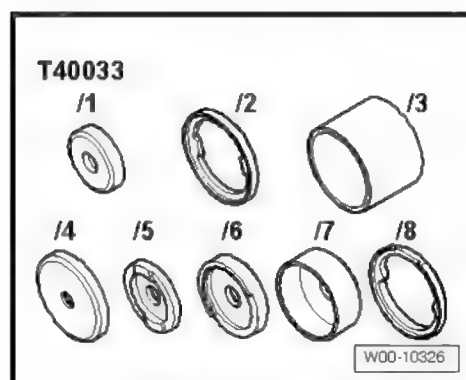
◆ Assembly tool - T10205A-



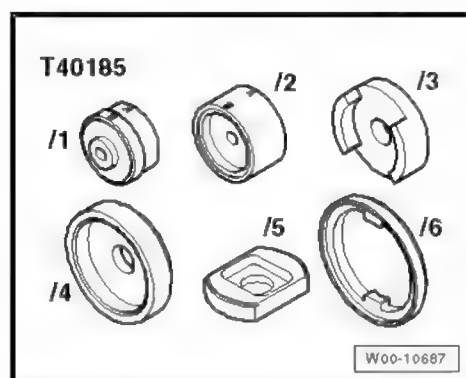
◆ Assembly tool - T10263-



◆ Assembly tool - T40033-



◆ Assembly tool - T40185-





## Removing



### Note

- ◆ Also check the other bushes before renewing a defective bonded rubber bush.
- ◆ If cracks, oil stains or other damage is visible, these bonded rubber bushes must also be renewed.
- ◆ The rear part of the subframe is lowered in order to renew the bonded rubber bushes. The subframe does not have to be removed.
- ◆ Do not lower the subframe more than 4 cm.
- ◆ Mark the position of the bonded rubber bushes in relation to the subframe before removing them.
- Secure vehicle to arms of lifting platform -arrow B- by attaching tensioning strap - T10038- to striker -arrow A-.
- Place a piece of rubber foam -1- or similar between side member and tensioning strap - T10038- and tighten tensioning strap - T10038- .



### Note

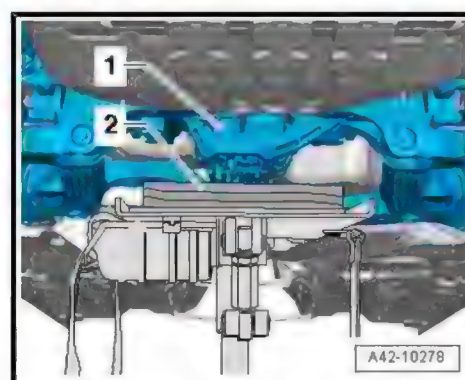
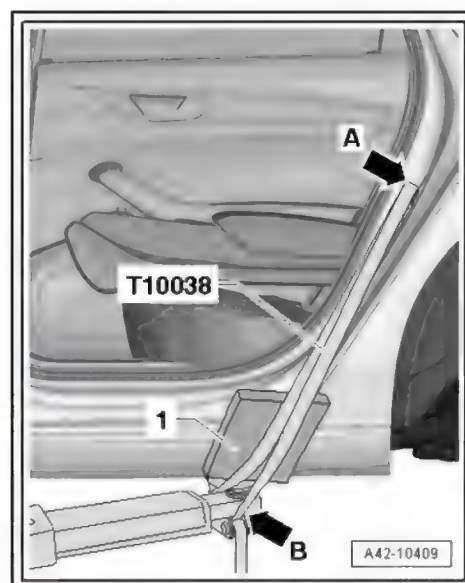
Take care not to scratch side member.



### CAUTION

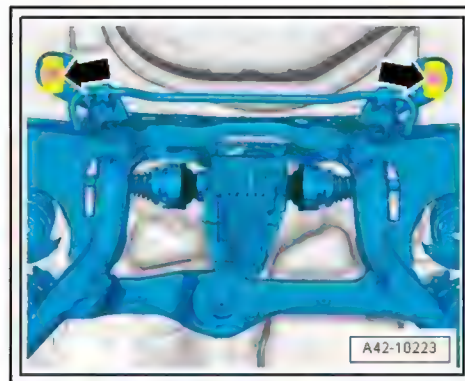
If vehicle is not secured, there is a risk of it slipping off the lifting platform.

- Remove rear wheels ⇒ [page 329](#) .
- Unscrew nuts on both brackets for rear section of exhaust system as far as end of thread.
- Place engine and gearbox jack - V.A.G 1383 A- under subframe -1-.
- Insert a suitable block of wood -2- under subframe -1-.





- Remove bolts -arrows-.



- Using assembly tool - 3301- and nut -3346/3- , as shown in illustration, screw spindle -3346/2- approx. 1.5 cm into body on side opposite bonded rubber bush to be renewed.

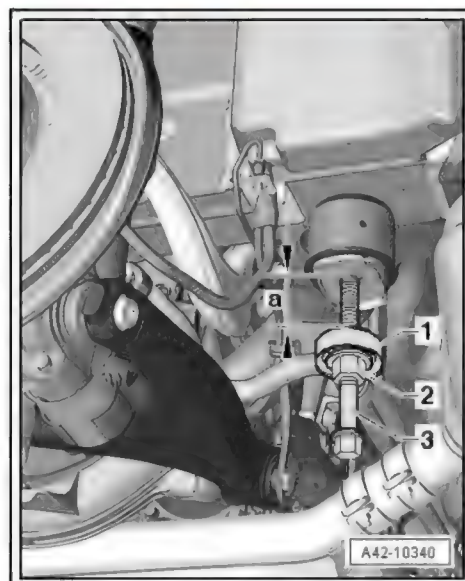
- 1 - Assembly tool - 3301-
- 2 - Nut -3346/3-
- 3 - Spindle -3346/2-



**Note**

*Screw nut -3346/3- onto spindle -3346/2- until distance -a- reaches 4 cm.*

- Lower subframe not more than 4 cm.

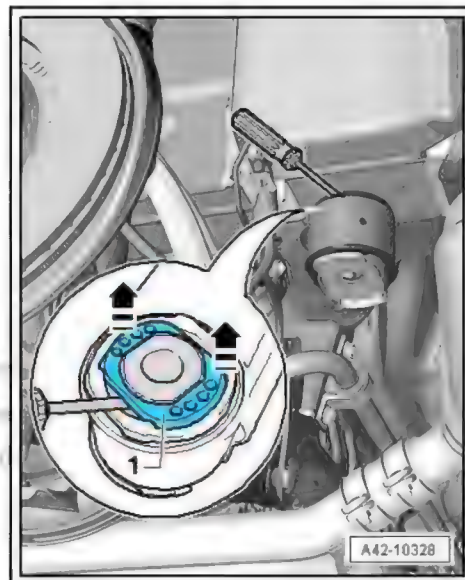


Applies to hydraulic bonded rubber bush:

- Prise plastic stop -1- upwards off bonded rubber bush.



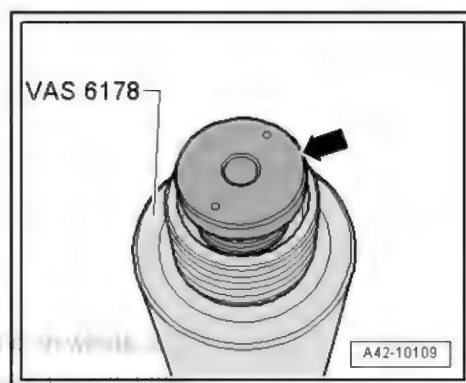
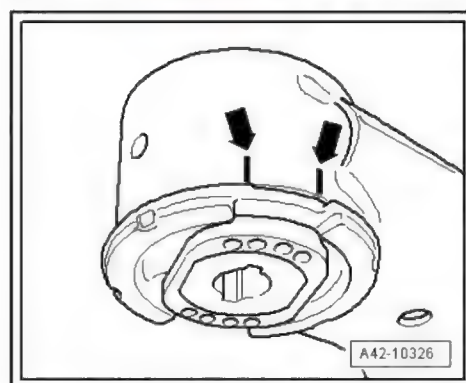
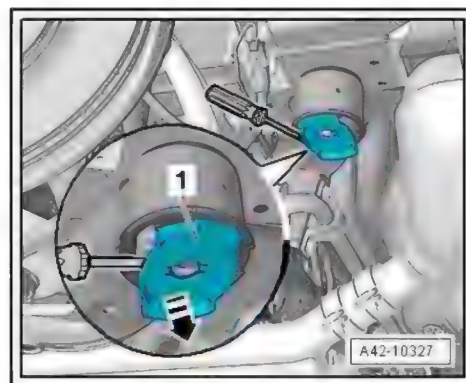
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Applies to all versions:

- Pry stop plate -1- off bonded rubber bush on alternate sides in area of retaining lugs.
- To facilitate installation, mark position of hydraulic bonded rubber bush in relation to subframe -arrows- using a felt-tip pen or similar.
- If necessary, unscrew small-diameter support -arrow- from hydraulic cylinder - VAS 6178- and screw in support - T10205/13- in its place.



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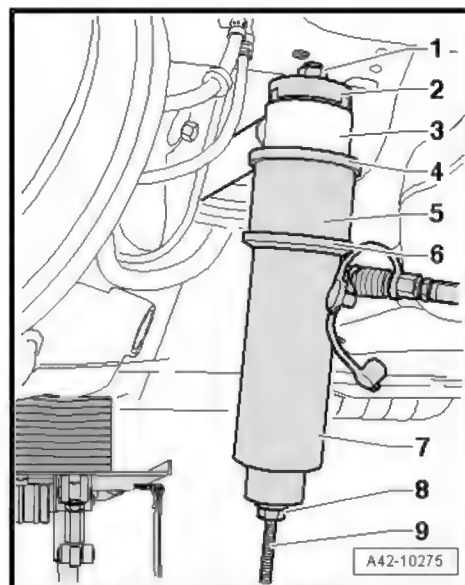
– Apply special tools to front bonded rubber bush as shown in illustration.

- 1 - Nut - T10263/5-
- 2 - Thrust piece - T40185/5- Recess faces towards bonded rubber bush.
- 3 - Subframe
- 4 - Support ring - T40185/6- Tapered end faces upwards and projections engage in recesses in bonded rubber bush.
- 5 - Tube - T40033/3-
- 6 - Support ring - T10205/4-
- 7 - Hydraulic cylinder - VAS 6178-
- 8 - Nut - T10263/5-
- 9 - Spindle - T10263/4- . Pin on end of spindle faces downwards.



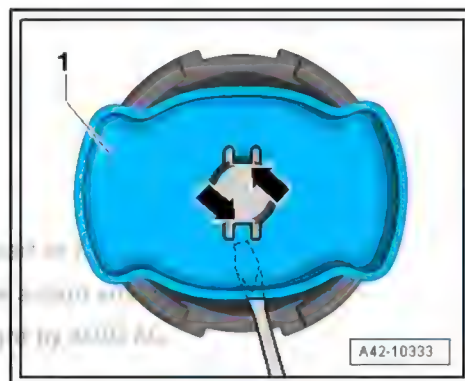
Hold hydraulic cylinder - VAS 6178- securely during pressing operation.

The bonded rubber bush will come loose suddenly. Injuries can be caused if the tools and the bonded rubber bush are allowed to drop.



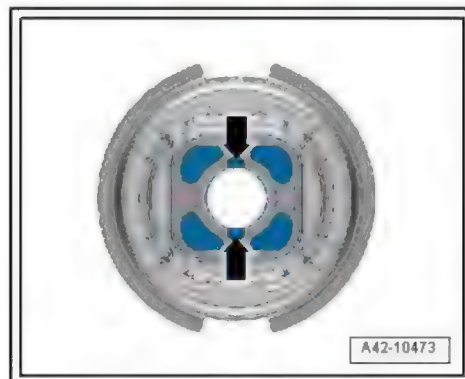
#### Installing

- Before installing bonded rubber bush, pry stop plate -1- off bonded rubber bush on alternate sides in area of retaining lugs -arrows-.



Installation position of conventional bonded rubber bush:

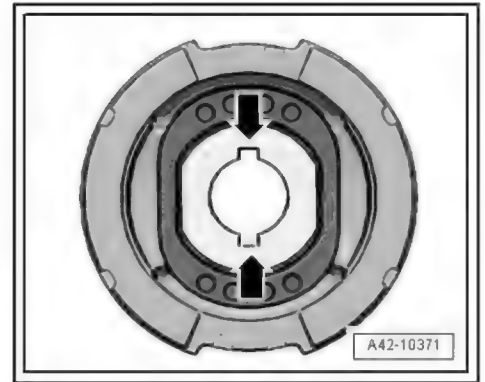
- Grooves -arrows- are in line with direction of travel.





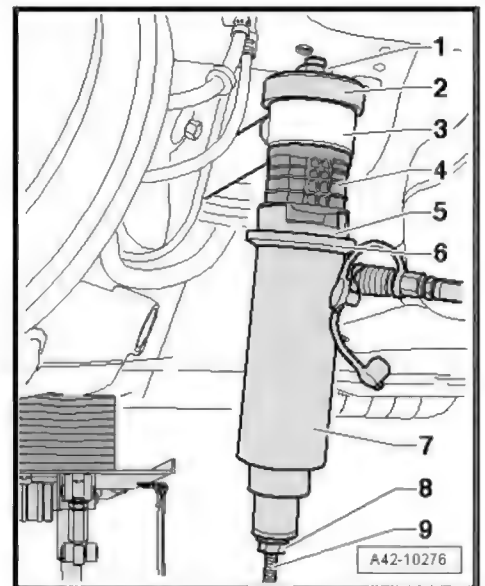
Installation position of hydraulic bonded rubber bush:

- Grooves -arrows- are in line with direction of travel.

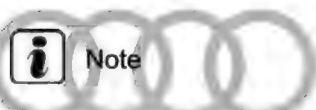


- Apply special tools to rear bonded rubber bush as shown in illustration.

- 1 - Nut - T10263/5-
  - 2 - Thrust piece - T40185/4-
  - 3 - Subframe
  - 4 - Conventional or hydraulic bonded rubber bush
  - 5 - Thrust piece - T40185/3-
  - 6 - Support ring - T10205/4-
  - 7 - Hydraulic cylinder - VAS 6178-
  - 8 - Nut - T10263/5-
  - 9 - Spindle - T10263/4- . Pin on end of spindle faces downwards.
- Align bonded rubber bush with markings made earlier and press in at the correct position until collar is flush with subframe bushing. If necessary, slacken cylinder and then press home again. Ensure that the bonded rubber bush remains straight during the first stage of installation, otherwise the outer ring may be damaged.



- Ends of rubber beads on bonded rubber bush must align with markings -arrows- made earlier on subframe.



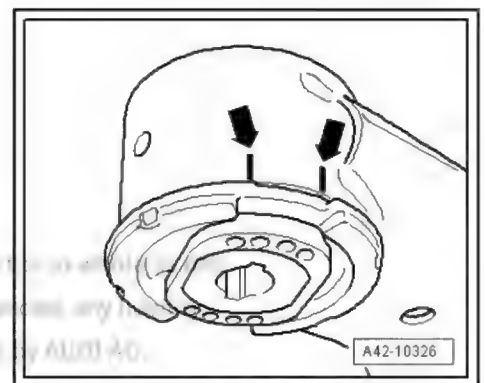
#### **Note**

*After renewing the bushes, make good any paint damage on the subframe with anti-corrosion coating, primer and black topcoat.*

- Fit stop plate on bonded rubber bush.

The remaining installation steps are carried out in the reverse sequence. Note the following:

- Install bracket for exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .
- Fit rear wheels ⇒ [page 329](#) .



## 2.4.5 Renewing bonded rubber bush (front) for rear final drive, four-wheel drive vehicles

Special tools and workshop equipment required



◆ Assembly tool - 3301-



◆ Assembly tool - 3346-



◆ Torque wrench - V.A.G 1332-



◆ Engine and gearbox jack - VAS 6931-





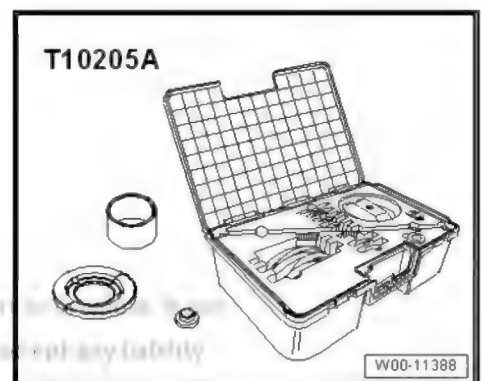
◆ Hydraulic cylinder - VAS 6178-



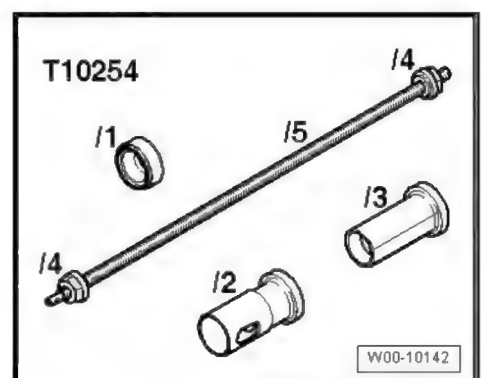
◆ Foot pump - VAS 6179-



◆ Assembly tool - T10205A-

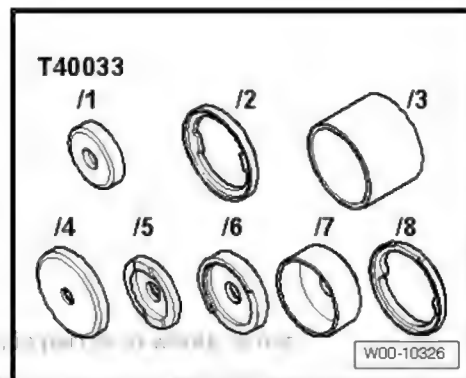


◆ Assembly tool - T10254-

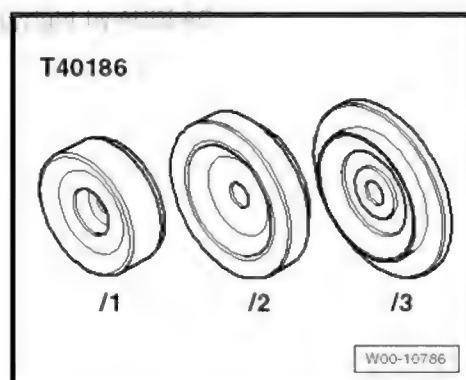




◆ Assembly tool - T40033-



◆ Assembly tool - T40186-



Removing



Note

- ◆ *The front part of the subframe is lowered in order to renew the bonded rubber bush. The subframe does not have to be removed.*
- ◆ *Do not lower the subframe more than 4 cm.*

Vehicles with coil springs:

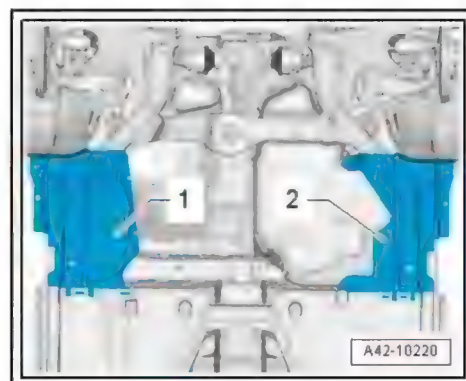
- Remove coil springs ➔ [page 230](#) .

Vehicles with air suspension:

- Bleed air springs of rear axle ➔ [page 284](#) .

All vehicles (continued):

- Remove underbody covers -1- and -2- ➔ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .
- Remove diagonal struts (if fitted) ➔ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing diagonal struts .



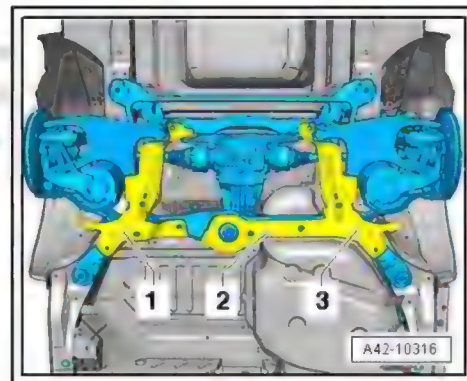


- If fitted, remove stone deflector -2-.

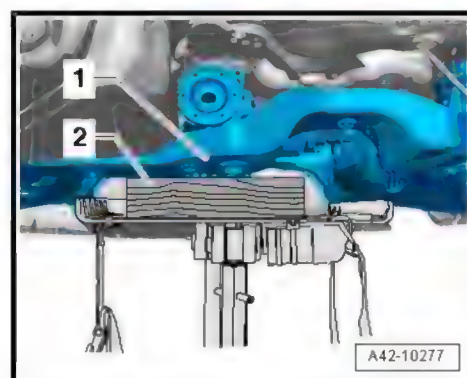


Note

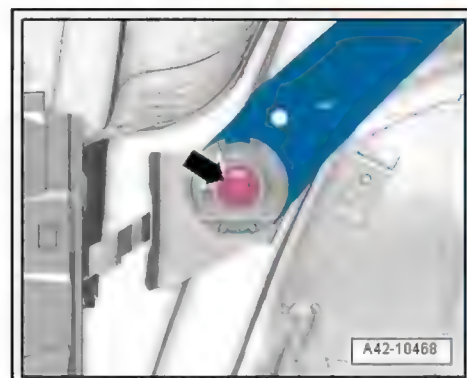
Disregard items -1 and 3-.



- Place engine and gearbox jack - V.A.G 1383 A- under subframe -1-.
- Insert a suitable block of wood -2- under subframe -1-.



- Remove bolt -arrow- on both sides.



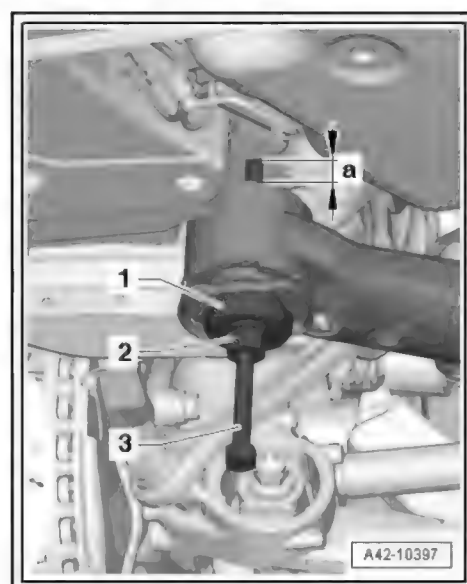
- Using assembly tool - 3301- and nut -T40253/1- , as shown in illustration, screw spindle -T40253- approx. 1.5 cm into body on side opposite bonded rubber bush to be renewed.

- 1 - Assembly tool - 3301-
- 2 - Nut -T40253/1-
- 3 - Spindle -T40253-



Note

Screw nut -T40253/1- onto spindle -T40253- until distance -a- reaches 4 cm.







- Remove bolt -2-.
- Lower subframe not more than 4 cm.
- Push final drive upwards by means of propshaft-1-. At the same time, insert thrust piece - T40186/1- and spindle - T10254/5- with nut - T10254/4- (2nd mechanic required).
- 4 - Spindle - T10254/5- . Pin on end of spindle faces downwards.
- 5 - Nut - T10254/4-
- 6 - Thrust piece - T40186/1-
- When removing and installing bonded rubber bush, make sure that spindle -4- does not contact threaded hole -3- in final drive.

If spindle - T10254/5- cannot be pushed through access hole in inner core of bonded rubber bush, access hole will have to be drilled out.



#### Note

- ◆ *Drill bits of different diameters should be used to drill out in several stages.*
- ◆ *During the drilling procedure, ensure that the threaded hole -3- in the final drive is not damaged by the drill bit (if necessary cover the hole with a suitable object).*



#### CAUTION

Safety goggles must be worn when drilling.

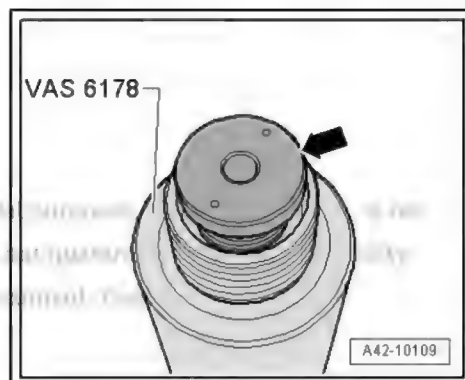
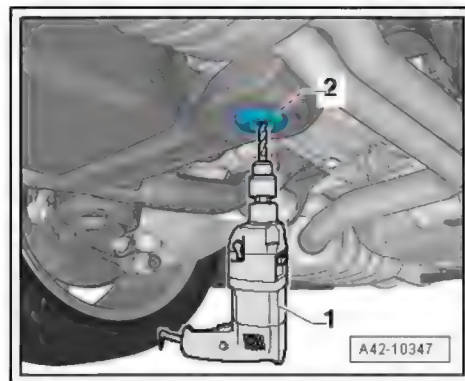
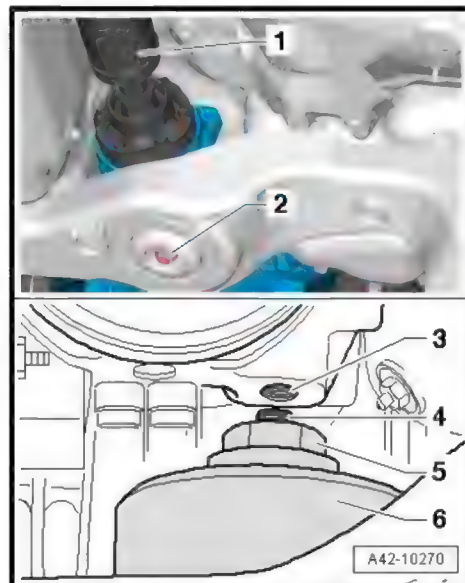
- Apply drill -1- to bonded rubber bush -2-, as shown in illustration, and drill out access hole in several stages.

Step 1: drill bit, 11 mm Ø

Step 2: drill bit, 11.5 mm Ø

Step 3: drill bit, 12 mm Ø

- If necessary, unscrew support - T10205/13- from hydraulic cylinder - VAS 6178- and screw in support with small internal diameter -arrow- in its place.





- Apply special tools to front bonded rubber bush as shown in illustration.

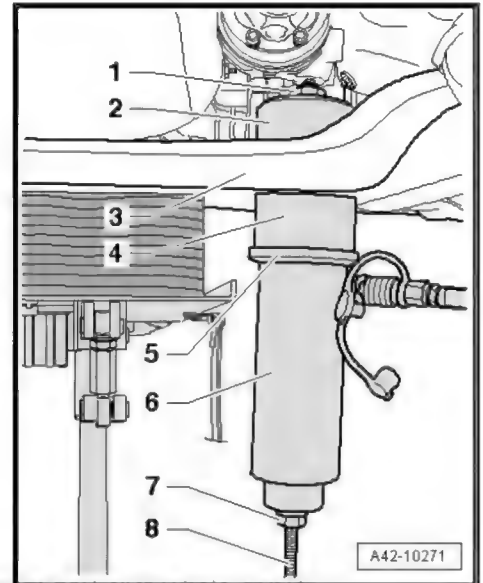
- 1 - Nut - T10254/4-
- 2 - Thrust piece - T40186/1-
- 3 - Subframe
- 4 - Tube - T40033/3-
- 5 - Support ring - T10205/4-
- 6 - Hydraulic cylinder - VAS 6178-
- 7 - Nut - T10254/4-
- 8 - Spindle - T10254/5- . Pin on end of spindle faces downwards.



#### Notice

Hold hydraulic cylinder - VAS 6178- securely during pressing operation.

The bonded rubber bush will come loose suddenly. Injuries can be caused if the tools and the bonded rubber bush are allowed to drop.



#### Installing

Installation is carried out in reverse sequence. Note the following:

- Before installing bonded rubber bush, check that spindle - T10254/5- can be pushed through access hole in inner core of bonded rubber bush. If spindle - T10254/5- cannot be pushed through access hole in inner core of bonded rubber bush, access hole will have to be drilled out.



#### CAUTION

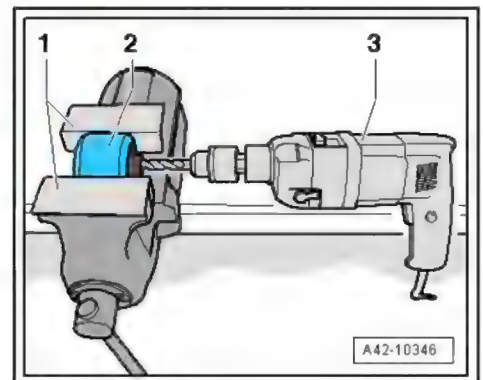
Safety goggles must be worn when drilling.

- Lightly clamp new bonded rubber bush -2- horizontally in jaws of vice, as shown in illustration (use protective jaw covers -1- and take care not to damage outer shell of bonded rubber bush).
- Apply drill -3- to bonded rubber bush -2-, as shown in illustration, and drill out access hole in several stages.

Step 1: drill bit, 11 mm Ø

Step 2: drill bit, 11.5 mm Ø

Step 3: drill bit, 12 mm Ø



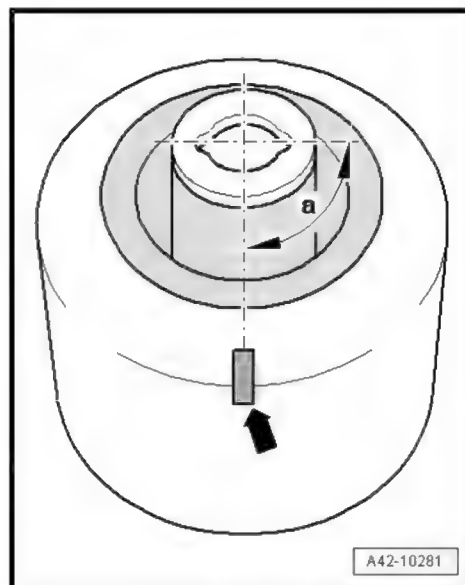


- Apply a continuous marking -arrow- at 90° to the grooves.  
 $a = 90^\circ$



#### Note

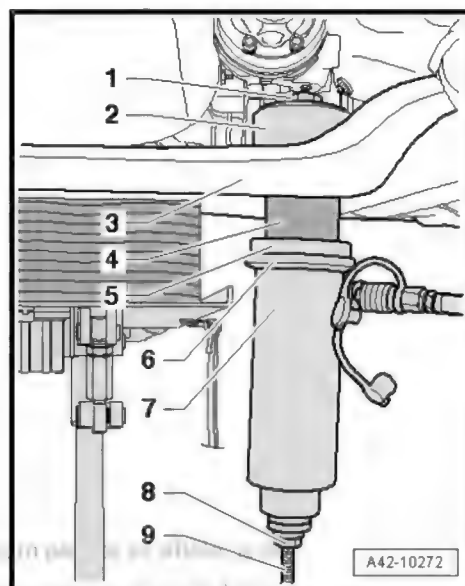
- ◆ *This marking is required for aligning the bush with the sub-frame.*
- ◆ *The slots are concealed by the tools when the bush is being installed.*
- Before installing, apply assembly lubricant to bonded rubber bush where it contacts subframe; for lubricant refer to ⇒ Electronic parts catalogue .
- Position bonded rubber bush in subframe so that previously made marking -arrow- points exactly in direction of travel.



- Apply special tools to front bonded rubber bush as shown in illustration.

- 1 - Nut - T10254/4-
- 2 - Thrust piece - T40033/7-
- 3 - Subframe
- 4 - Bonded rubber bush
- 5 - Thrust plate - T40186/2-
- 6 - Support ring - T10205/4-
- 7 - Hydraulic cylinder - VAS 6178-
- 8 - Nut - T10254/4-
- 9 - Spindle - T10254/5- . Pin on end of spindle faces downwards.

- Pull bush into subframe as far as stop.



#### Note

*If the paint on the subframe has been damaged when renewing the bushes, make good the damage with anti-corrosion coating, primer and black topcoat.*

The remaining installation steps are carried out in the reverse sequence.

- Install underbody covers ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim .
- Install diagonal struts (if previously fitted) ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing diagonal struts .
- Install coil springs ⇒ [page 230](#) .
- Charge air springs of rear axle ⇒ [page 284](#) .

## 2.4.6 Renewing bonded rubber bush (rear) for rear final drive, four-wheel drive vehicles

Special tools and workshop equipment required



◆ Assembly tool - 3301-



◆ Assembly tool - 3346-



◆ Torque wrench - V.A.G 1332-



◆ Engine and gearbox jack - VAS 6931-

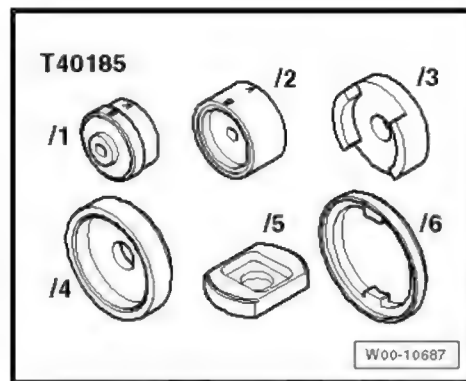


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◆ Assembly tool - T40185- with spindle -T40185/9-



Removing



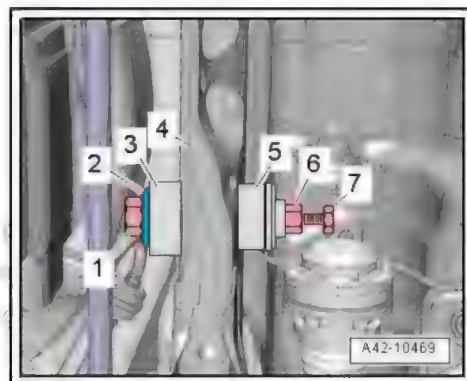
Note

*The rear bonded rubber bush for the rear final drive can only be pulled out and installed from the rear.*

- Remove rear final drive ⇒ Final drive; Rep. gr. 39 ; Final drive; Removing and installing final drive .
- Set up tools on subframe as shown in illustration.

- 1 - Nut - 3346/3-
- 2 - Pressure bearing - 3301-
- 3 - Tube - T40185/2- . Side "A" must face towards subframe.
- 4 - Subframe
- 5 - Tube - T40185/1- . Side "A" must face towards subframe.
- 6 - Nut
- 7 - Spindle -T40185/9-

- Pull bush out of subframe by turning nut - 3346/3- and counterholding spindle -T40185/9- .

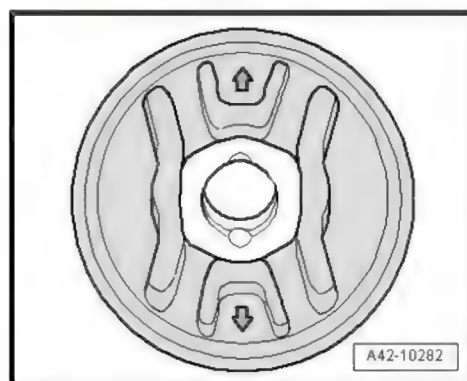


Installing

Installation is carried out in reverse sequence. Note the following:

Installation position of rear bonded rubber bush:

- Arrows on rear side of bonded rubber bush should face vertically upwards or downwards.

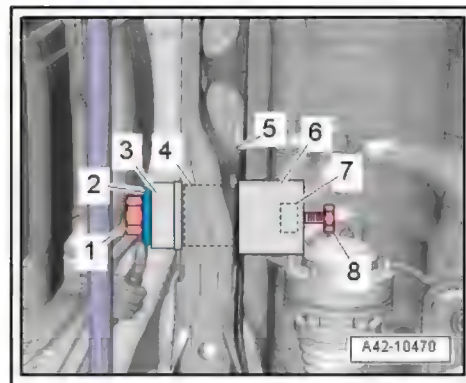






- Set up tools and bonded rubber bush on subframe as shown in illustration.

- 1 - Nut - 3346/3-
- 2 - Pressure bearing - 3301-
- 3 - Tube - T40185/1- . Side "B" must face towards subframe.
- 4 - Bonded rubber bush
- 5 - Subframe
- 6 - Tube - T40185/2- . Side "B" must face towards subframe.
- 7 - Nut
- 8 - Spindle - T40185/9-



- Pull bush into subframe as far as stop by turning nut - 3346/3- and counterholding spindle - T40185/9- .



#### Note

*If the paint on the subframe has been damaged when renewing the bushes, make good the damage with anti-corrosion coating, primer and black topcoat.*

- Install rear final drive ⇒ Final drive; Rep. gr. 39 ; Final drive; Removing and installing final drive .
- Wheel alignment check may be required (perform road test) ⇒ [page 141](#) .

Wheel alignment must always be checked and adjusted if necessary using VW/Audi-approved equipment.







### 3 Anti-roll bar

⇒ "3.1 Exploded view - anti-roll bar", page 200

⇒ "3.2 Removing and installing anti-roll bar", page 200

#### 3.1 Exploded view - anti-roll bar

1 - Bolt

- ☐ 40 Nm +90°
- ☐ Always renew if removed
- ☐ Vehicle must be in unladen position when tightening ⇒ [page 12](#)

2 - Coupling rod

- ☐ Removing and installing ⇒ [page 200](#)

3 - Bolt

- ☐ 40 Nm +90°
- ☐ Always renew if removed
- ☐ Vehicle must be in unladen position when tightening ⇒ [page 12](#)

4 - Nut

- ☐ Always renew if removed

5 - Lower transverse link

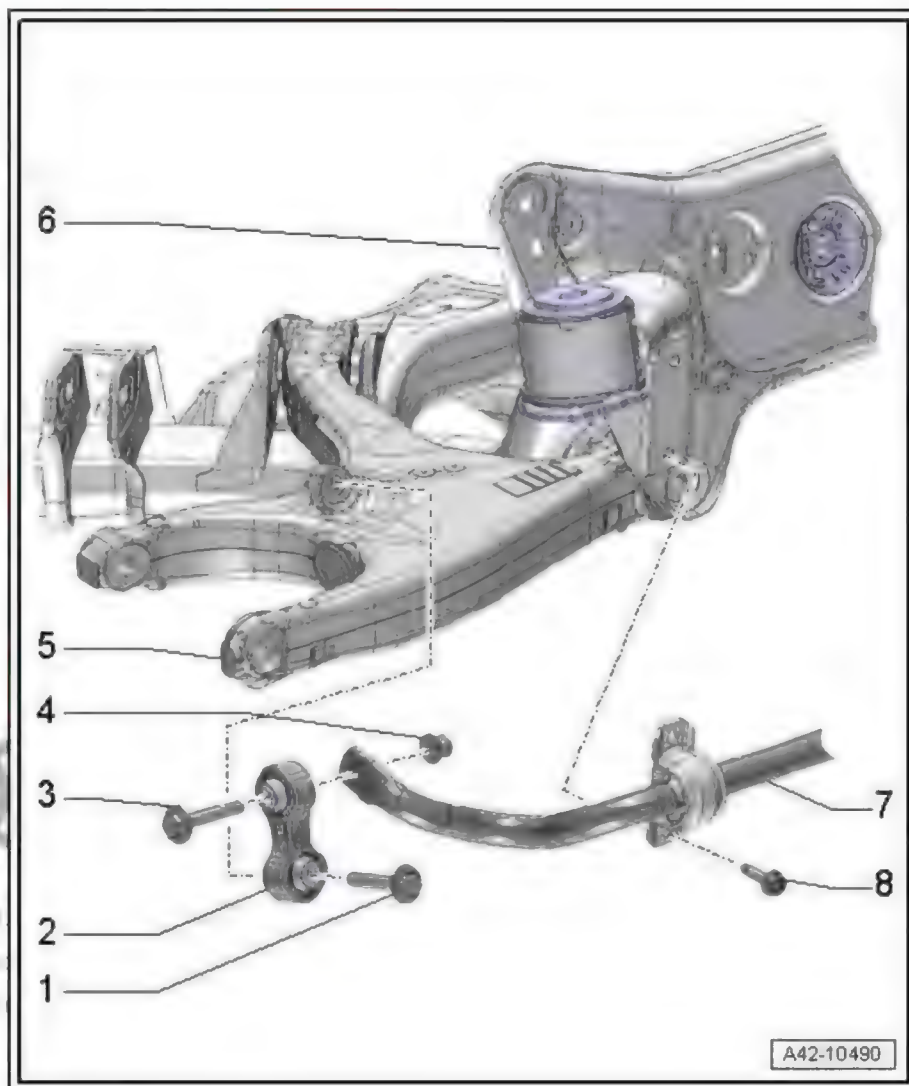
6 - Subframe

7 - Anti-roll bar

- ☐ Removing and installing ⇒ [page 200](#)
- ☐ Rubber bush and clamp must not be separated from anti-roll bar

8 - Bolt

- ☐ 25 Nm +90°
- ☐ Always renew if removed
- ☐ Tighten evenly



#### 3.2 Removing and installing anti-roll bar

Special tools and workshop equipment required





◆ Torque wrench - V.A.G 1331-



◆ Engine and gearbox jack - VAS 6931-



Removing

- Before starting work, measure distance from centre of wheel to lower edge of wheel housing  
⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#) or  
⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#).

**! NOTICE**

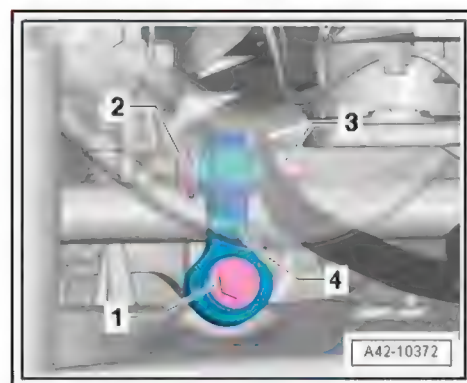
Take care not to damage paintwork on anti-roll bar during removal and installation.

- Remove bolt -1-.



Note

- ◆ *The bolt connection between the coupling rod and lower transverse link is under tension.*
- ◆ *Press the lower transverse link slightly downwards when removing bolt -1- for the reason above.*
- Remove nut -3- and detach bolt -2- and coupling rod -4-.
- Remove rear section of exhaust system ⇒ Engine; Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .





- Remove bolts -1- on both sides and take out anti-roll bar -2- towards left.



#### Note

*The anti-roll bar -2- is removed and installed complete with the rubber bushes and clamps. Do not detach clamps and rubber bushes.*

#### Installing

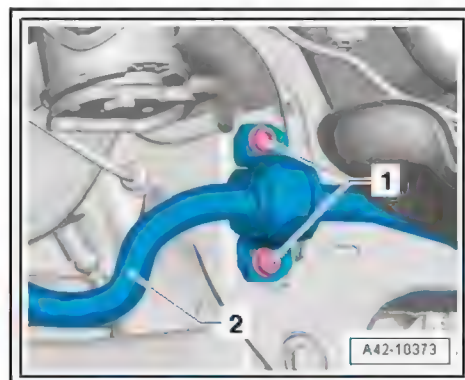
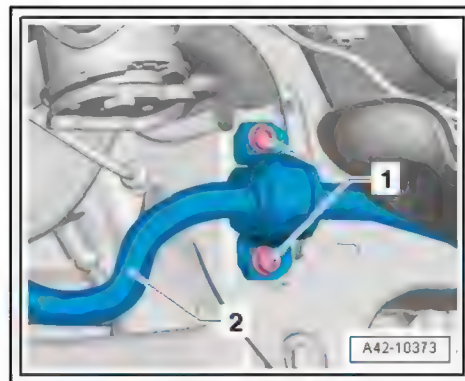
Installation is carried out in reverse sequence. Note the following:



#### Note

- ♦ *Bonded rubber bushes can only be turned to a limited extent. The suspension mountings must therefore only be tightened when the suspension is in the unladen position or reference position.*
- ♦ *Raising suspension to unladen position (vehicles with coil springs) ⇒ [page 12](#) authorised by AUDI AG. AUDI AG does not*
- ♦ *Raising suspension to reference position (vehicles with air suspension) ⇒ [page 15](#)*

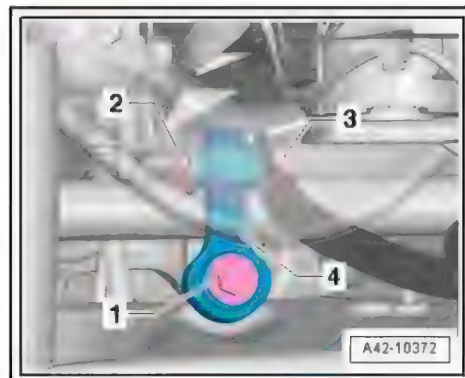
- Install anti-roll bar from left to right.
- Screw in bolts -1- loosely on both sides and then tighten evenly.



- Install coupling rod -4- and bolt -2-.
- Tighten nut -3- on both sides.
- Tighten bolt -1- on both sides.
- Install rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers

#### Tightening torques

- ♦ ⇒ ["3.1 Exploded view - anti-roll bar", page 200](#)







## 4 Suspension links, track rod

⇒ "4.1 Exploded view - transverse links", page 203

⇒ "4.2 Removing and installing upper transverse link", page 205

⇒ "4.3 Removing and installing lower transverse link", page 207

⇒ "4.4 Removing and installing track rod", page 212

### 4.1 Exploded view - transverse links

#### 1 - Track rod

- ☐ Removing and installing  
⇒ [page 212](#)
- ☐ Different versions and  
installation position  
⇒ [page 205](#) and  
⇒ [page 205](#) ; for correct  
version refer to ⇒ Elec-  
tronic parts catalogue

#### 2 - Eccentric bolt

- ☐ Always renew if re-  
moved
- ☐ Tighten in unladen posi-  
tion ⇒ [page 12](#) or refer-  
ence position  
⇒ [page 15](#)

#### 3 - Eccentric washer

#### 4 - Nut

- ☐ 95 Nm
- ☐ Always renew if re-  
moved

#### 5 - Bolt

- ☐ 70 Nm +180°
- ☐ Always renew if re-  
moved
- ☐ Tighten in unladen posi-  
tion ⇒ [page 12](#) or refer-  
ence position  
⇒ [page 15](#)

#### 6 - Nut

- ☐ Always renew if re-  
moved

#### 7 - Bracket

- ☐ For rear left vehicle level sender - G76- / rear right vehicle level sender - G77-

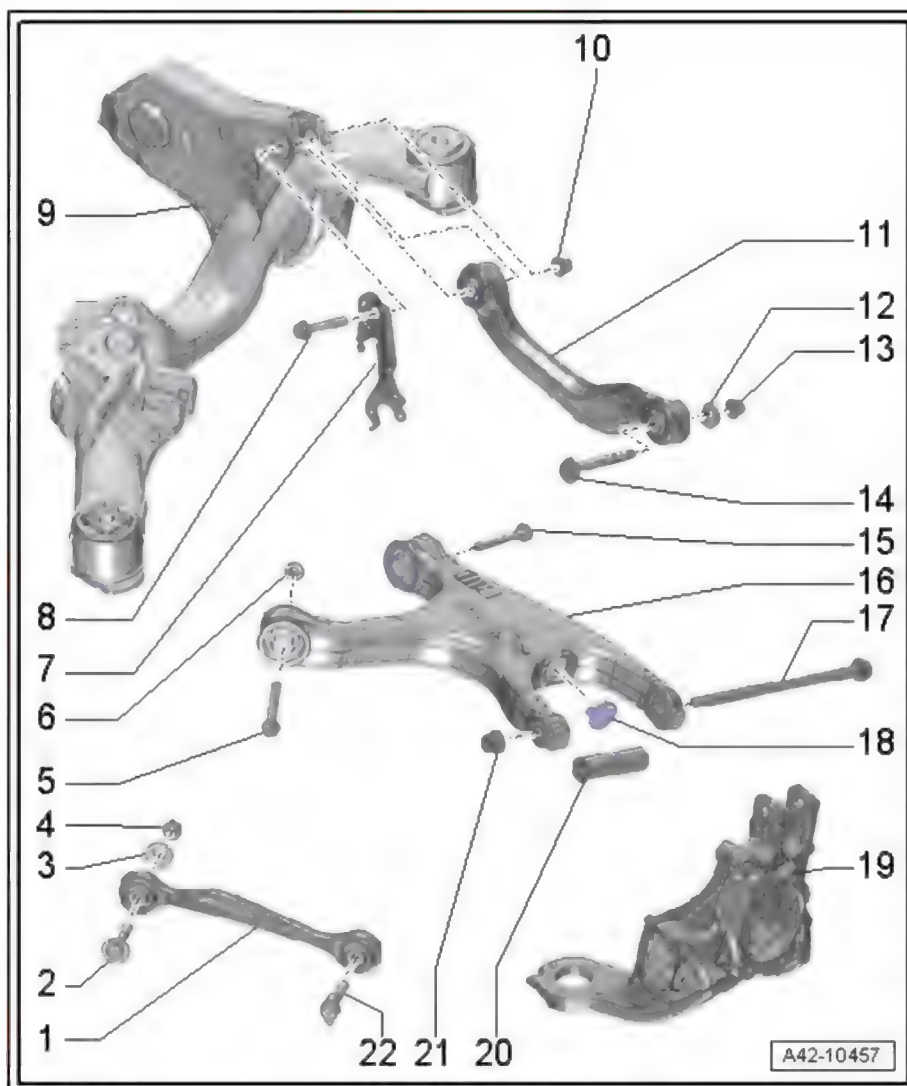
#### 8 - Bolt

- ☐ 70 Nm +180°
- ☐ Always renew if removed
- ☐ Tighten in unladen position ⇒ [page 12](#) or reference position ⇒ [page 15](#)

#### 9 - Subframe

#### 10 - Nut

- ☐ Always renew if removed







11 - Upper transverse link

- ☐ Removing and installing ⇒ [page 205](#)

12 - Shim

13 - Nut

- ☐ 95 Nm
- ☐ Always renew if removed
- ☐ Tighten in unladen position ⇒ [page 12](#) or reference position ⇒ [page 15](#)

14 - Adjuster screw

15 - Bolt

- ☐ 70 Nm +180°
- ☐ Always renew if removed
- ☐ Tighten in unladen position ⇒ [page 12](#) or reference position ⇒ [page 15](#)

16 - Lower transverse link

- ☐ Removing and installing ⇒ [page 207](#)

17 - Bolt

- ☐ 120 Nm +360°
- ☐ Always renew if removed
- ☐ Tighten in unladen position ⇒ [page 12](#) or reference position ⇒ [page 15](#)



Note

*Wheel alignment must be checked if  
bolt is loosened*

18 - Sealing cap

19 - Wheel bearing housing

20 - Spacer tube

- ☐ Always renew if removed

21 - Nut

- ☐ Always renew if removed



Note

*Wheel alignment must be checked if  
nut is slackened.*

22 - Bolt

- ☐ 90 Nm +90°
- ☐ Always renew if removed
- ☐ Tighten in unladen position ⇒ [page 12](#) or reference position ⇒ [page 15](#)





#### Track rod for vehicles with coil springs

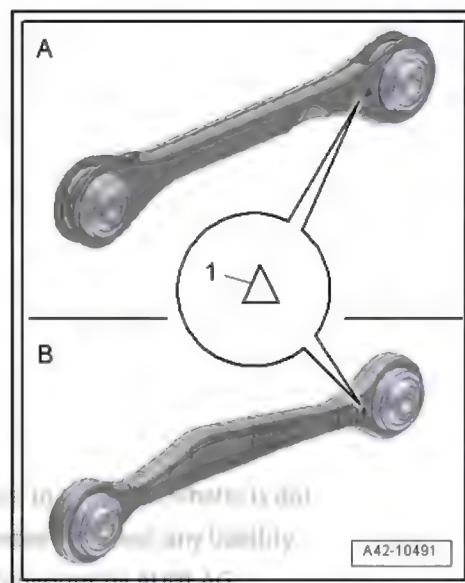
A - Track rod (pressed steel)

B - Track rod (aluminium casting)

1 - Installation position: the marking must be on the outside and the tip of the triangle must point upwards



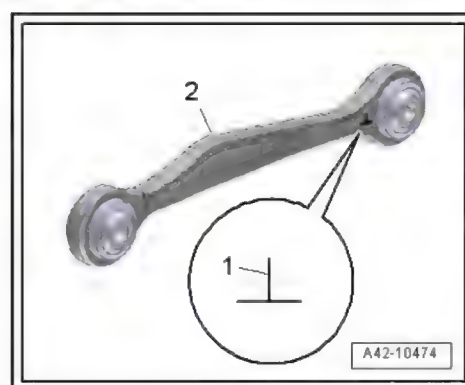
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#### Track rod for vehicles with air suspension

1 - Installation position: the marking must be on the outside and the vertical line must point upwards

2 - Track rod (aluminium casting)

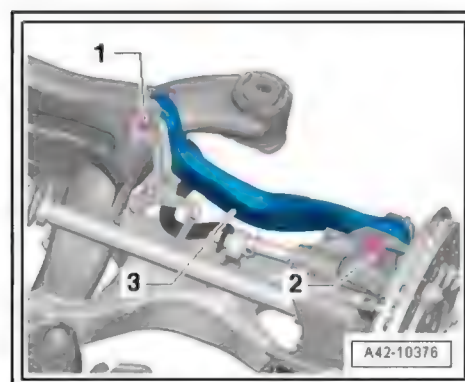


## 4.2 Removing and installing upper transverse link



Note

*As inner bolt - 1 - is inaccessible, upper transverse link can only be removed after taking out subframe.*



Special tools and workshop equipment required



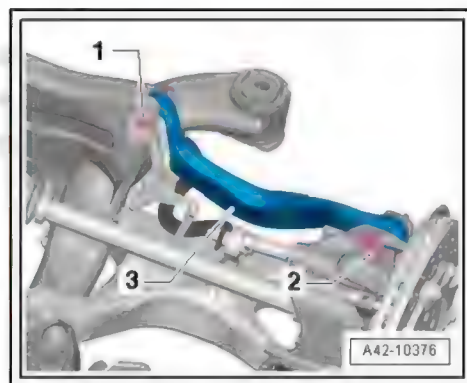


◆ Torque wrench - V.A.G 1332-



Removing

- Before starting work, measure distance from centre of wheel to lower edge of wheel housing  
⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#) or  
⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#) .
- Remove subframe: front-wheel drive vehicles ⇒ [page 146](#) ,  
four-wheel drive vehicles ⇒ [page 151](#)
- Mark installation position of adjuster screw -2- relative to wheel bearing housing.
- Unscrew bolted connections -1- and -2-.
- Take out upper transverse link -3-.



Installing

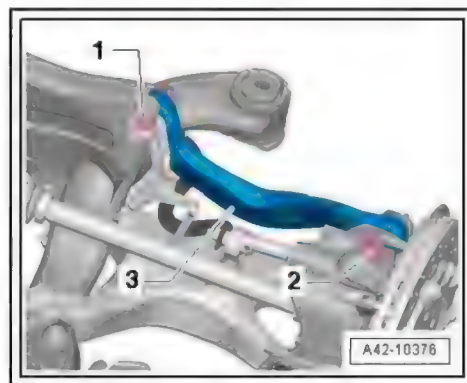


Note

*Renew bolts and self-locking nuts.*

Installation position of upper transverse link on subframe

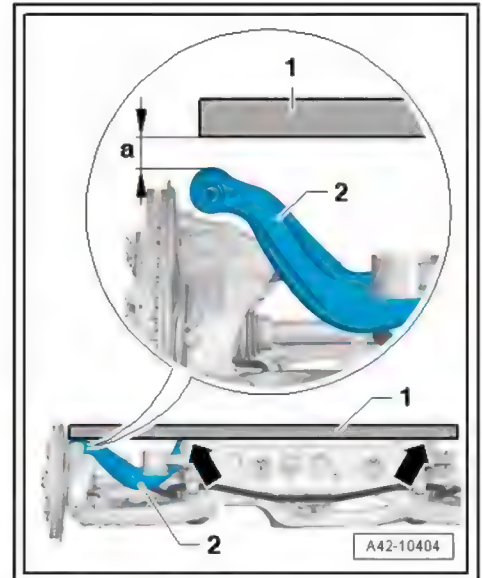
- Bolt upper transverse link -3- loosely to subframe at mounting -1-.



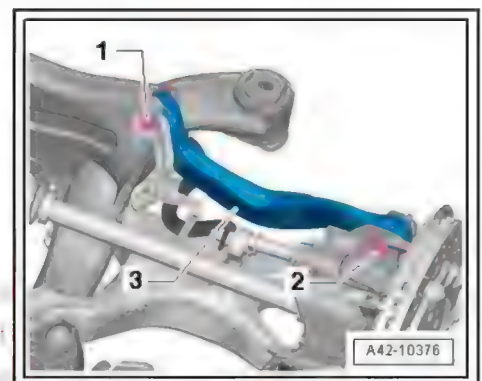




- Lay straight steel bar -1- flat on highest points of subframe -arrows-.
- Position upper transverse link -2- so dimension a = 11 mm is attained between steel bar -1- and burr of upper transverse link -2-.



- Secure upper transverse link -3- to subframe in this position.
- Attach wheel bearing housing to transverse link and tighten new nut to 20 Nm. Note position of eccentric washer -2-.
- Install subframe: front-wheel drive vehicles ➔ [page 146](#) , four-wheel drive vehicles ➔ [page 151](#)

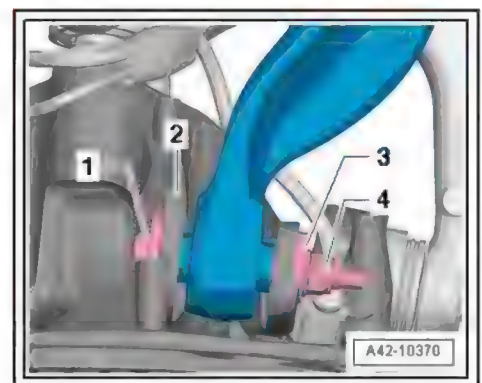


- Slacken nut -4-.
- Raise suspension to unladen position ➔ [page 12](#) or reference position ➔ [page 15](#) and tighten nut -4-.
- Fit rear wheel ➔ [page 329](#) .
- Check and adjust wheel alignment as required, see chart ➔ [page 344](#) .

Wheel alignment must always be checked and adjusted if necessary using VW/Audi-approved equipment.

Tightening torques

- ◆ ➔ ["4.1 Exploded view - transverse links", page 203](#)



## 4.3 Removing and installing lower transverse link

Special tools and workshop equipment required





◆ Torque wrench - V.A.G 1331-



◆ Torque wrench - V.A.G 1332-



◆ Engine and gearbox jack - VAS 6931-



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◆ Tensioning strap - T10038-



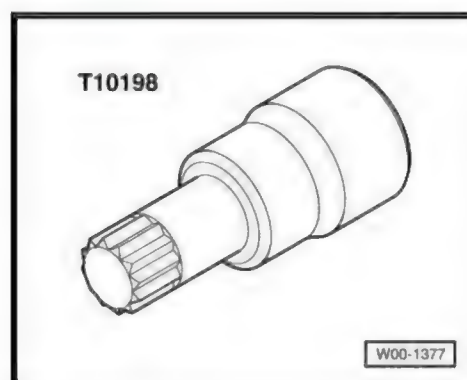




◆ Support - T10149-



◆ Bit XZN 16 - T10198-



Removing

- Before starting work, measure distance from centre of wheel to lower edge of wheel housing  
⇒ [“3.14 Lifting suspension to unladen position - vehicles with coil springs”, page 12](#) or  
⇒ [“3.15 Lifting suspension to reference position \(vehicles with air suspension\)”, page 15](#) .

- Remove rear wheel ⇒ [page 329](#) .

Vehicles with coil springs:

- Remove coil spring ⇒ [page 230](#) .

Vehicles with air suspension:

- Bleed air springs of rear axle ⇒ [page 284](#) .





All vehicles (continued):

- Secure vehicle to arms of lifting platform -arrow B- by attaching tensioning strap - T10038- to striker -arrow A-.
- Place a piece of rubber foam -1- or similar between side member and tensioning strap - T10038- and tighten tensioning strap - T10038- .



Note

Take care not to scratch side member.



### CAUTION

If vehicle is not secured, there is a risk of it slipping off the lifting platform.

- Remove diagonal strut ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing diagonal struts .
- When removing the lower transverse link on the left side, the rear section of the exhaust system must be removed for the previous step ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .
- Unscrew bolt -2- for vehicle level sender -1-.

- Remove bolt -1-.

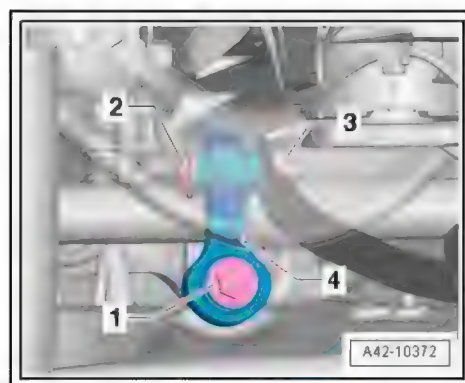
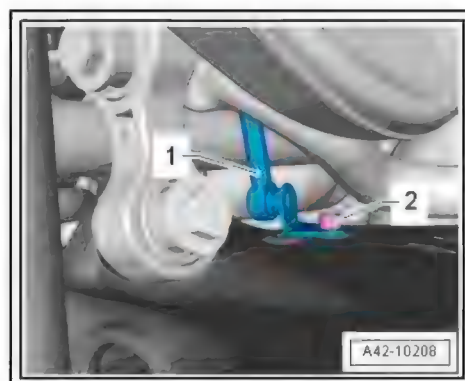
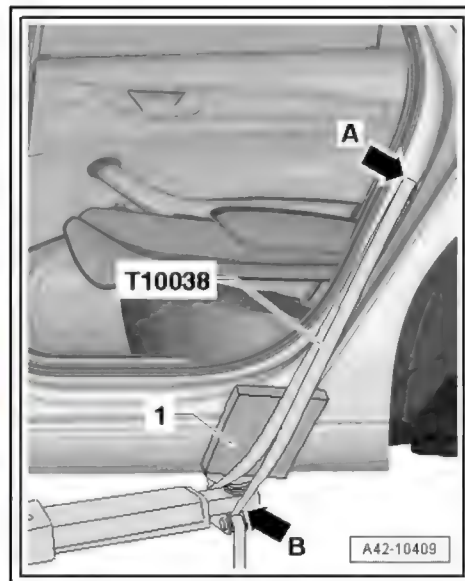


Note

Disregard -items 2, 3, 4-.

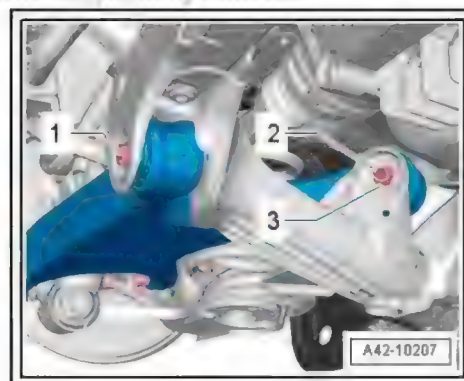
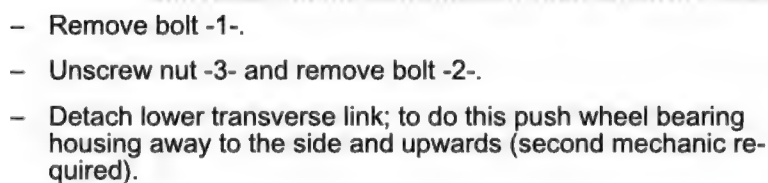


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- 



*When pushing away the wheel bearing housing, take care not to damage the electrical wiring and brake hose. The joints of the drive shafts on a four-wheel drive vehicle must not be allowed to bend to such an extent that they contact the end stop.*

Installation is carried out in reverse sequence. Note the following:

- ◆ *Bonded rubber bushes can only be turned to a limited extent. The suspension mountings must therefore only be tightened when the suspension is in the unladen position or reference position.*
- ◆ *Raising suspension to unladen position (vehicles with coil springs) ⇒ [page 12](#)*
- ◆ *Raising suspension to reference position (vehicles with air suspension) ⇒ [page 15](#)*

- 
- 1 2 3
- A42-10207



- Fit bolt -1- with spacer -2- and screw on nut -3- loosely.

#### NOTICE

The bolted connection must not be tightened by the nut.

- Tighten bolt -1-.
- Tighten remaining bolts.
- Install coil spring ⇒ [page 230](#) .
- Fit rear wheel ⇒ [page 329](#) .
- Charge air springs of rear axle ⇒ [page 284](#) .
- Check and adjust wheel alignment as required, see chart ⇒ [page 344](#) .

Wheel alignment must always be checked and adjusted if necessary using VW/Audi-approved equipment.

- On vehicles with automatic headlight range control, perform basic setting of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .
- If the vehicle level sender has been removed and refitted or the linkage detached on vehicles with electronic damping control, the reference position must be re-adapted; start appropriate program on ⇒ Vehicle diagnostic tester in Guided Functions.
- If the reference position has been re-adapted on vehicles with lane departure warning, the lane departure warning control unit - J759- must be recalibrated ⇒ [page 365](#) .

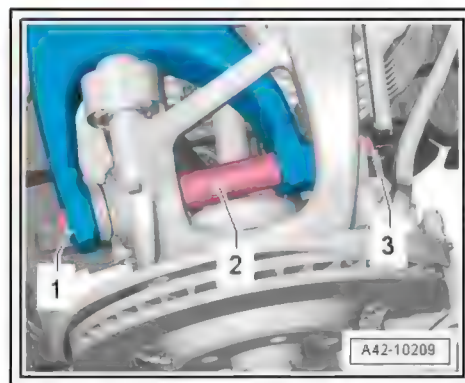
Tightening torques

- ♦ ⇒ ["4.1 Exploded view - transverse links", page 203](#)

## 4.4 Removing and installing track rod

Special tools and workshop equipment required

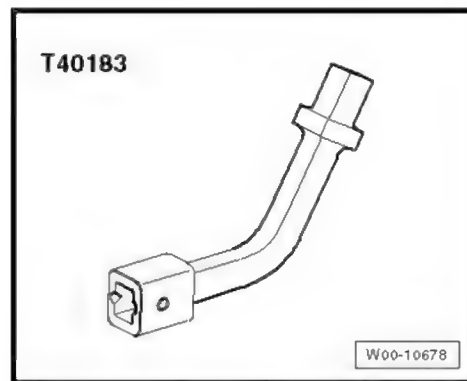
- ♦ Torque wrench - V.A.G 1332-







◆ Socket - T40183-



Removing



Note



*The procedure is described for a vehicle with air suspension; the procedure for other vehicles is basically the same.*

- Before starting work, measure distance from centre of wheel to lower edge of wheel housing  
⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#) or  
⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#) .
- Remove rear wheel ⇒ [page 329](#) .
- Detach front section of wheel housing liner and push to one side ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (rear) .





- First remove bolt -4-.
- Mark installation position of eccentric bolt -1- relative to sub-frame -2-.
- Unscrew nut and take out eccentric washer and eccentric bolt -1-.
- Detach track rod -5-.



#### Note

Disregard -item 3-.

#### Installing

Installation is carried out in reverse sequence. Note the following:



#### Note

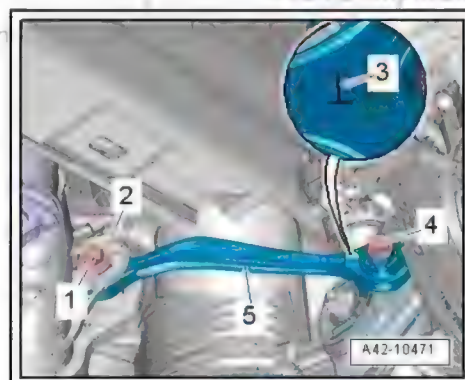
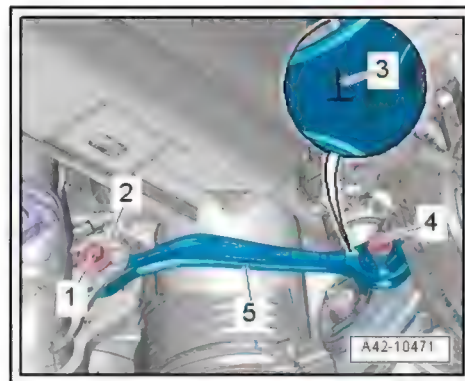
- ◆ *Bonded rubber bushes can only be turned to a limited extent. The suspension mountings must therefore only be tightened when the suspension is in the unladen position or reference position.*
- ◆ *Raising suspension to unladen position (vehicles with coil springs) ⇒ [page 12](#)*
- ◆ *Raising suspension to reference position (vehicles with air suspension) ⇒ [page 15](#)*

- Fit track rod -5-.
- Observe marking -3- ⇒ [page 205](#) or ⇒ [page 205](#) .
- First insert eccentric bolt -1- fully and align it with marking made on removal.
- Insert bolt -4- and tighten.
- Fit eccentric washer and new nut for eccentric bolt -1- hand-tight. Do not tighten nut to specified torque until wheel alignment has been checked and adjusted.
- Fit rear wheel ⇒ [page 329](#) .
- Check and adjust wheel alignment as required, see chart ⇒ [page 344](#) .

Wheel alignment must always be checked and adjusted if necessary using VW/Audi-approved equipment.

#### Tightening torques

- ◆ ⇒ ["4.1 Exploded view - transverse links", page 203](#)







## 5 Suspension strut/shock absorber, spring

⇒ ["5.1 Exploded view - suspension strut/shock absorber, spring", page 215](#)

⇒ ["5.2 Modifying spring compressing system", page 220](#)

⇒ ["5.3 Removing and installing shock absorber", page 223](#)

⇒ ["5.4 Servicing shock absorber", page 227](#)

⇒ ["5.5 Removing and installing spring", page 230](#)

### 5.1 Exploded view - suspension strut/shock absorber, spring

⇒ ["5.1.1 Exploded view - suspension strut/shock absorber, coil spring", page 215](#)

⇒ ["5.1.2 Exploded view - suspension strut/shock absorber, air spring", page 217](#)

⇒ ["5.1.3 Exploded view - suspension strut/shock absorber, spring, shock absorber", page 218](#)

#### 5.1.1 Exploded view - suspension strut/shock absorber, coil spring

1 - Wheel bearing housing

2 - Stone deflector

3 - Bottom spring plate

- ☐ Note installation position ⇒ [page 216](#).

4 - Coil spring

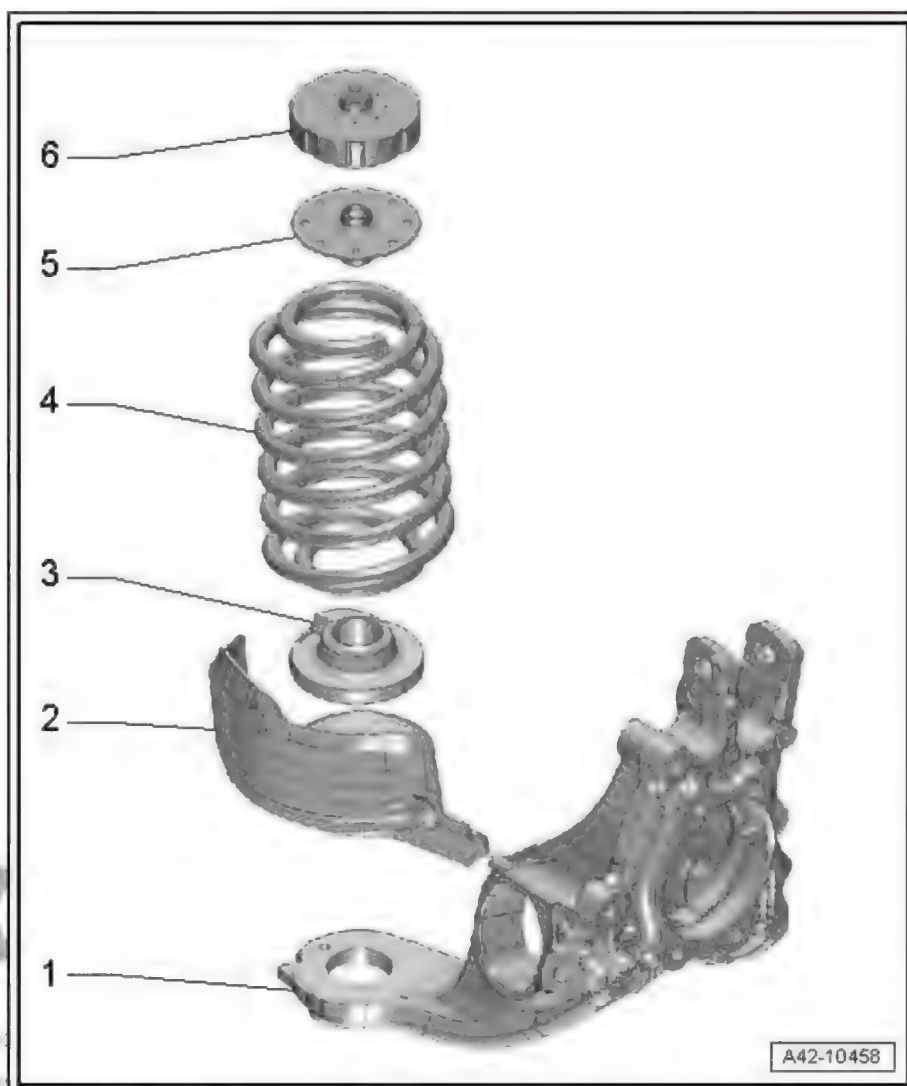
- ☐ Note installation position ⇒ [page 216](#).

5 - Top spring plate

- ☐ Some versions have eccentric top spring plate ⇒ [page 216](#); for allocation refer to ⇒ Electronic parts catalogue

6 - Spacer

- ☐ Not fitted on all vehicles; for allocation refer to ⇒ Electronic parts catalogue



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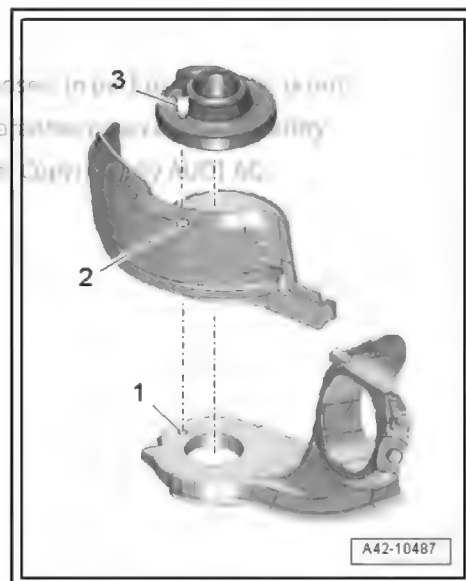


#### Installation position of bottom spring plate

- Centring pin -3- on bottom spring plate must engage in hole -2- in stone deflector and in hole -1- in wheel bearing housing.

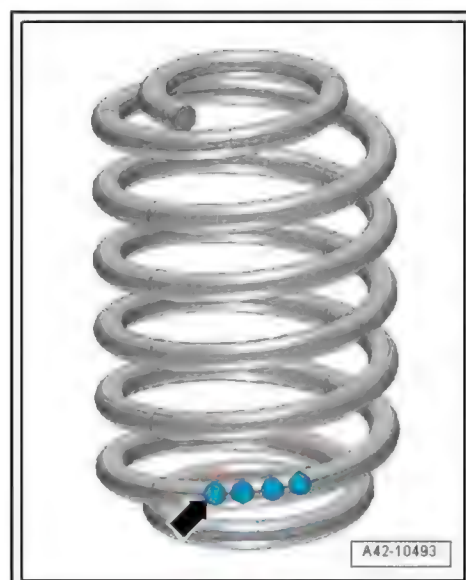
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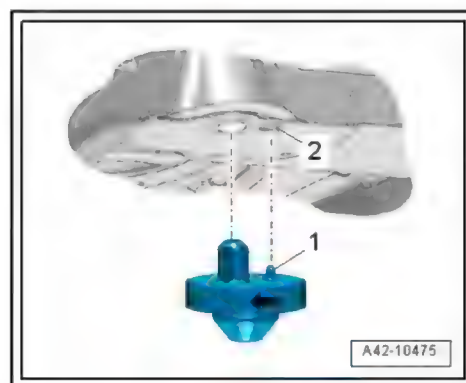
#### Installation position of coil spring

- Coloured marking -arrow- at the bottom.
- Rotate end of spring so it lies against stop on bottom spring plate.



#### Installation position of eccentric top spring plate

- Arrow- points in direction of travel
- Centring pin -1- must engage in longitudinal member -2-.

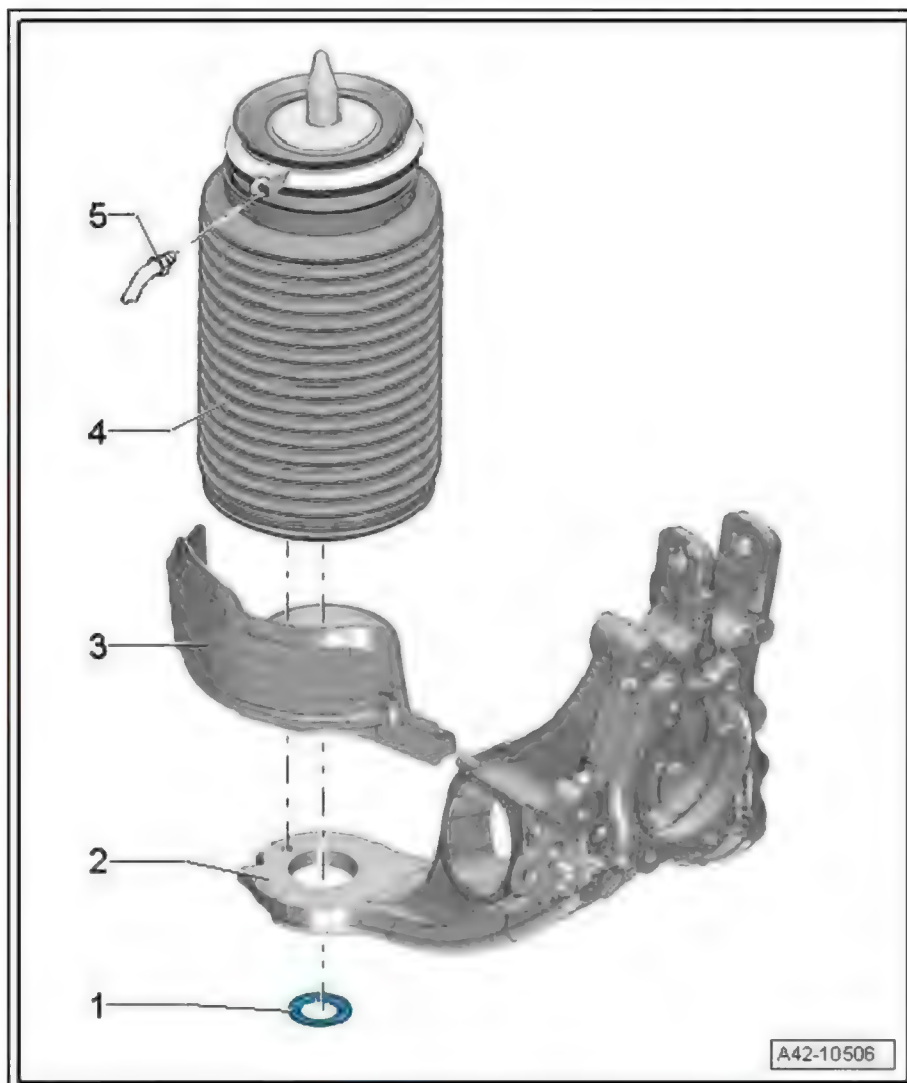






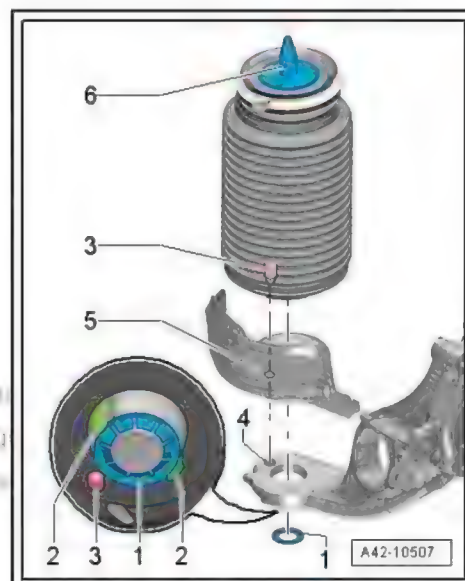
## 5.1.2 Exploded view - suspension strut/shock absorber, air spring

- 1 - Spring washer
- 2 - Wheel bearing housing
- 3 - Stone deflector
- 4 - Air spring
  - ❑ Removing and installing  
⇒ [page 238](#)
  - ❑ Note installation position  
⇒ [page 217](#) .
- 5 - Air pipe
  - ❑ Tightening torque for  
connection piece  
⇒ [Item 3 \(page 294\)](#)



### Installation position of air spring

- Locating pin -3- on air spring must engage in hole -5- in stone deflector and in hole -4- in wheel bearing housing.
- Retaining catches -2- must engage under wheel bearing housing.
- Spring washer -1- must be pushed on parallel as far as base of air spring.
- Locating pin -6- on air spring must engage correctly in body.

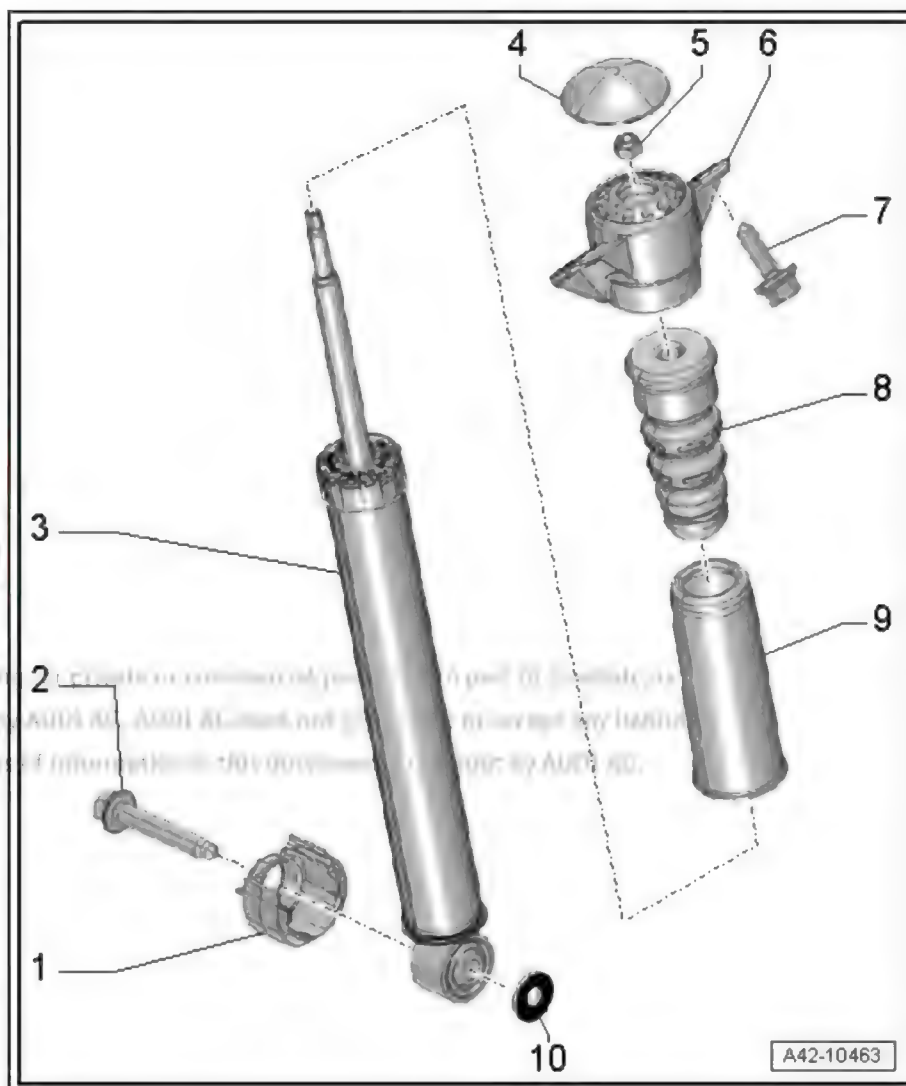




### 5.1.3 Exploded view - suspension strut/shock absorber, spring, shock absorber

#### Shock absorber (conventional)

- 1 - Stone deflector
  - ☐ 150 Nm +180°
  - ☐ Always renew if re-removed
  - ☐ Vehicle must be in unladen position when tightening ⇒ [page 12](#)
- 2 - Bolt
  - ☐ Removing and installing ⇒ [page 223](#)
  - ☐ Servicing ⇒ [page 227](#)
- 3 - Shock absorber
- 4 - Protective cap
- 5 - Nut
  - ☐ 35 Nm
  - ☐ Always renew if re-removed
- 6 - Shock absorber mounting (top)
- 7 - Bolt
  - ☐ 50 Nm +90°
  - ☐ Always renew if re-removed
- 8 - Bump stop
- 9 - Protective sleeve
- 10 - Washer
  - ☐ For corrosion protection
  - ☐ Always use

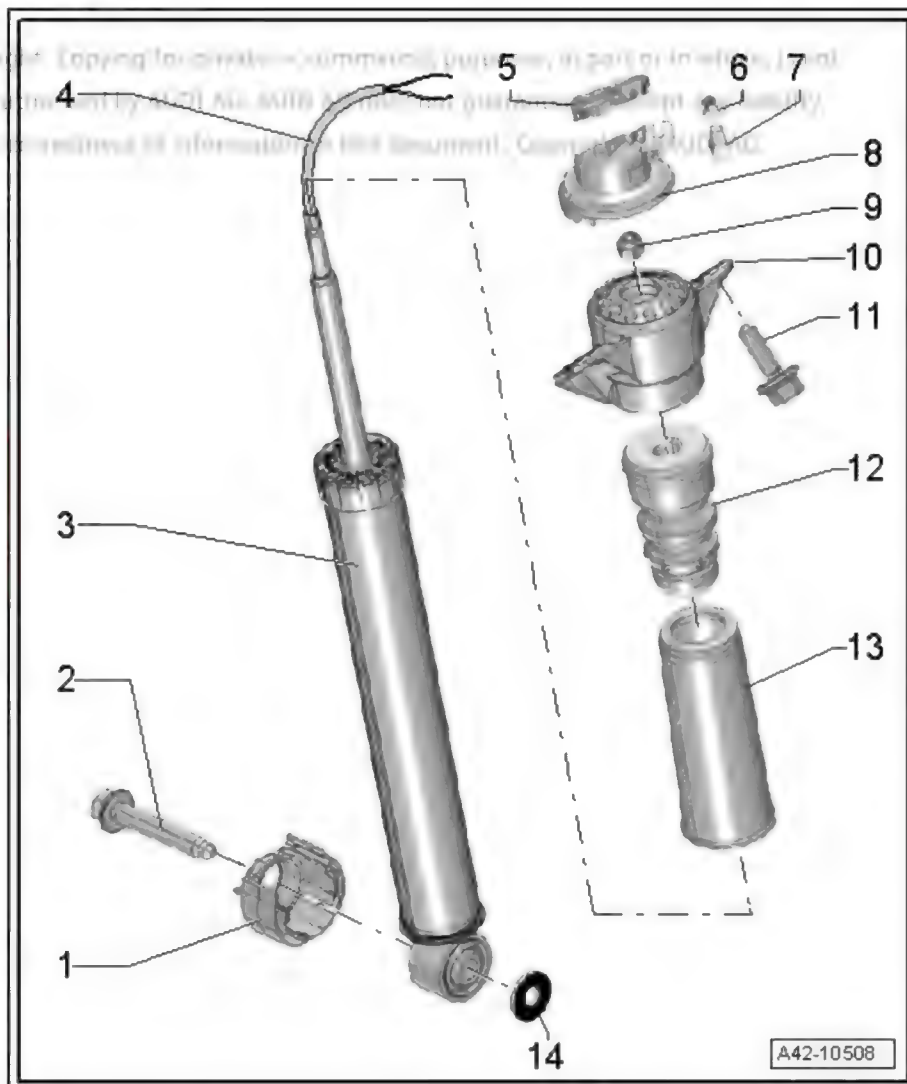


#### Shock absorber with electronic damping control





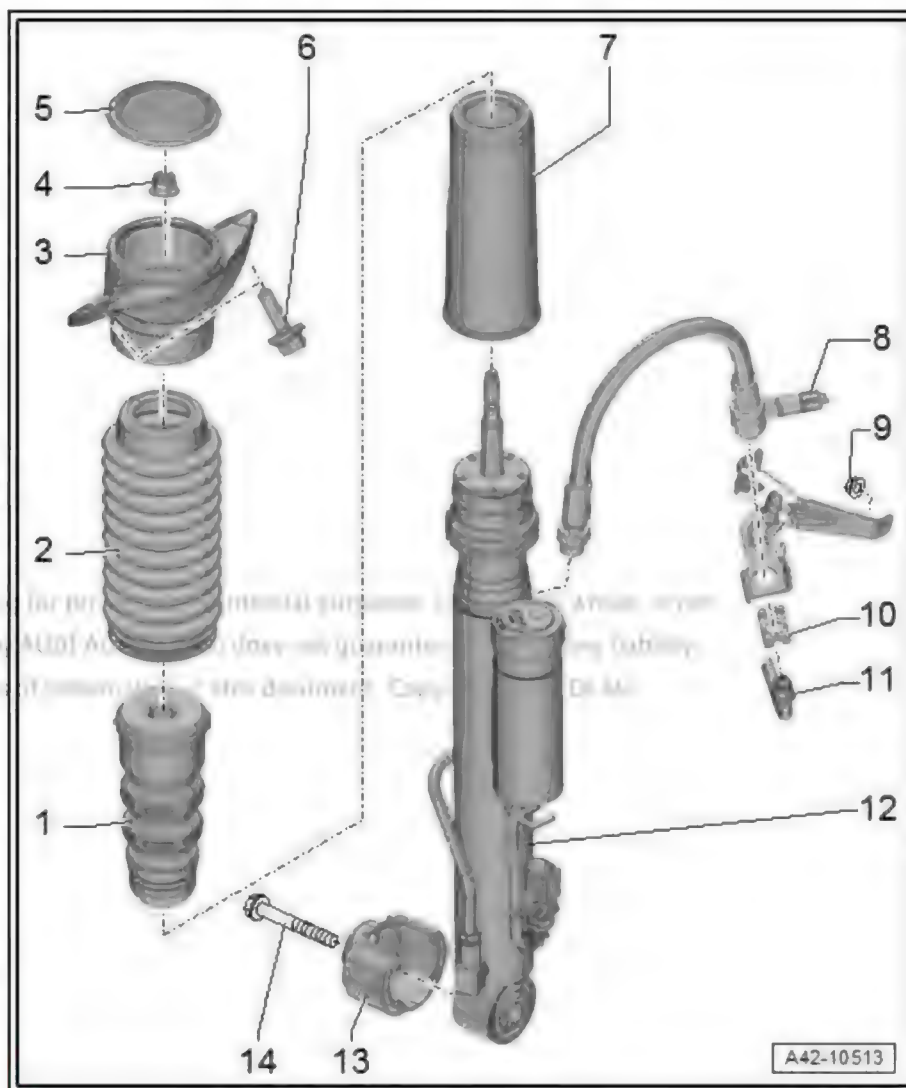
- 1 - Stone deflector
- 2 - Bolt
  - ☐ 150 Nm +180°
  - ☐ Always renew if re-moved
  - ☐ Vehicle must be in unladen position when tightening ⇒ [page 12](#)
- 3 - Shock absorber
  - ☐ Removing and installing ⇒ [page 223](#)
  - ☐ Servicing ⇒ [page 227](#)
- 4 - Wiring
- 5 - Protective cap
- 6 - Seal
  - ☐ For electrical connector
- 7 - Connector housing
  - ☐ Do not kink or twist wire when attaching connector
- 8 - Protective cap
- 9 - Nut
  - ☐ 50 Nm
  - ☐ Always renew if re-moved
- 10 - Shock absorber mounting (top)
- 11 - Bolt
  - ☐ 50 Nm +90°
  - ☐ Always renew if re-moved
- 12 - Bump stop
- 13 - Protective sleeve
- 14 - Washer
  - ☐ For corrosion protection
  - ☐ Always use



Shock absorber with DRC system



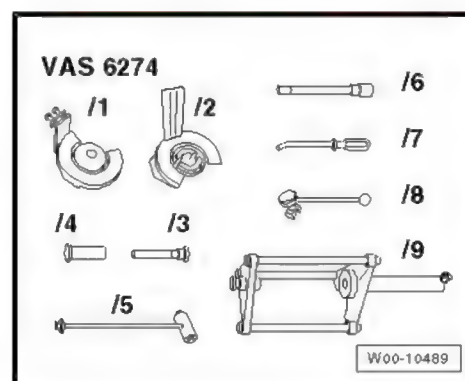
- 1 - Bump stop
- 2 - Protective sleeve
- 3 - Shock absorber mounting
- 4 - Nut
  - ☐ 35 Nm
  - ☐ Always renew if removed
- 5 - Protective cap
- 6 - Bolt
  - ☐ 50 Nm +90°
  - ☐ Always renew if removed
- 7 - Protective sleeve
- 8 - Drain/charge valve with hose
  - ☐ Install so that it is free of tension
- 9 - Nut
  - ☐ 9 Nm
- 10 - Clip
- 11 - Union screw
  - ☐ 14 Nm
- 12 - Shock absorber
  - ☐ For DRC system
  - ☐ Removing and installing ⇒ [page 223](#)
  - ☐ Servicing ⇒ [page 227](#)
- 13 - Stone deflector
- 14 - Bolt
  - ☐ 150 Nm +180°
  - ☐ Always renew if removed
  - ☐ Vehicle must be in unladen position when tightening ⇒ [page 12](#)



## 5.2 Modifying spring compressing system

Special tools and workshop equipment required

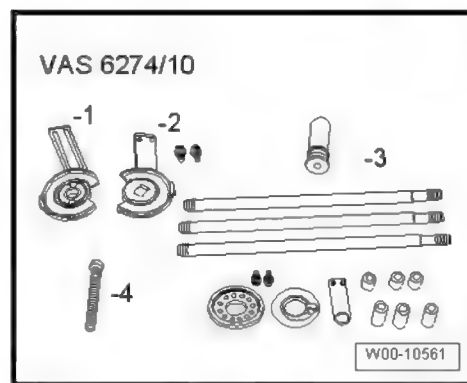
- ◆ Spring compressing system - VAS 6274-







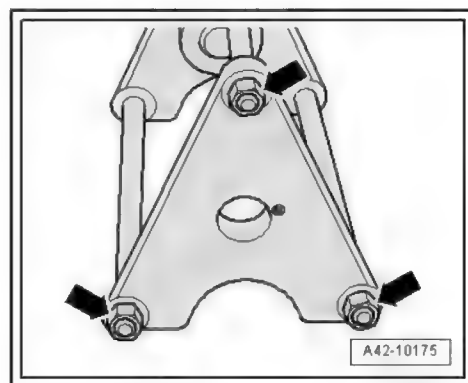
◆ Supplementary set - VAS 6274/10-



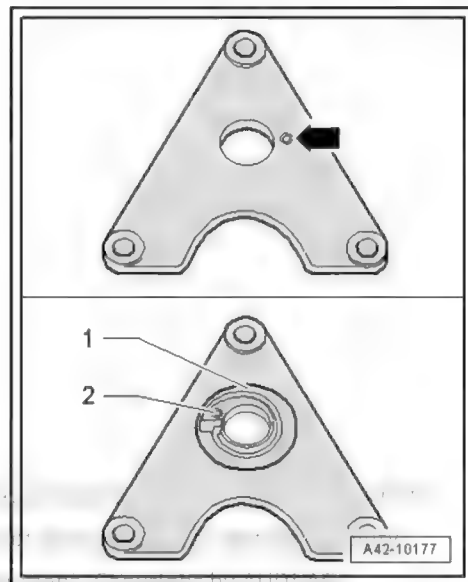
Note

*The equipment only needs to be modified once. It is not necessary to convert the equipment back to its original condition.*

- Remove nuts -arrows- (6x) from spring compressor.
- Detach plate and pull rods out of spring compressor.

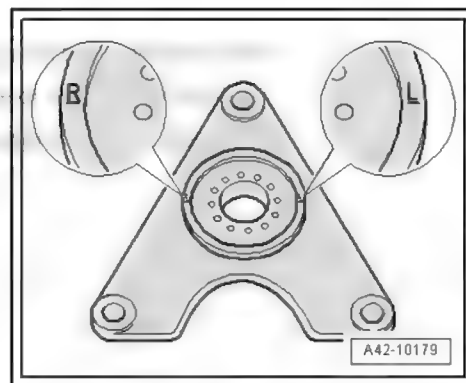


- Remove bolt -arrow- and detach existing spring retainer -1- with non-countersunk hole -2-.

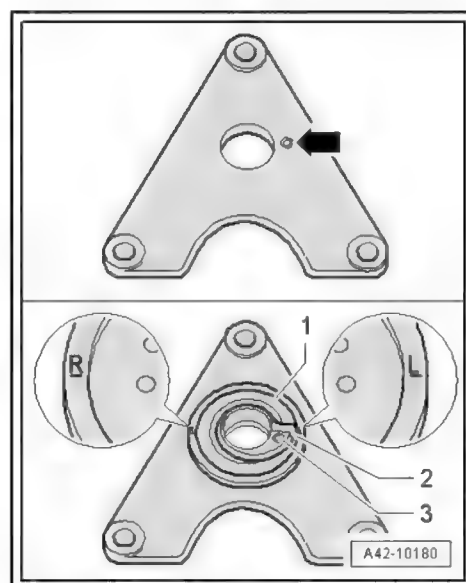




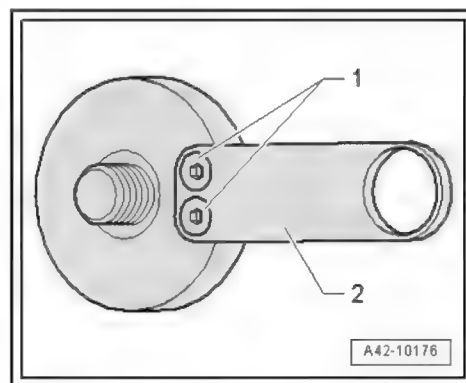
- Insert new retainer with threaded holes from supplementary set into plate so that markings “R” and “L” are aligned horizontally on plate.



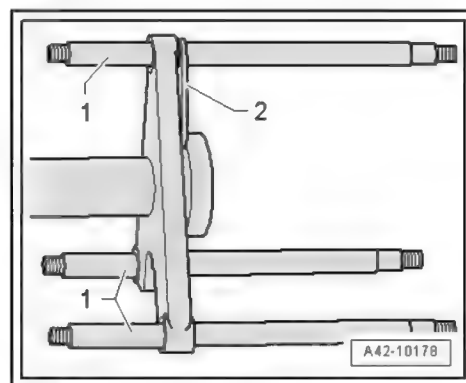
- Tighten new retainer with new bolt -arrow- from supplementary set. Do not turn retainer when doing so.
- Fit new spring retainer -1- with countersunk bore -3- from supplementary set.
- Fit new spring retainer -1- so that stop -2- is opposite marking “L”.
- Tighten new spring retainer -1- with new bolt from supplementary set.
- Detach spring retainer at hydraulic cylinder end.



- Remove plate -2- and replace with new plate from supplementary set.
- Tighten new plate -2- with new bolts -1- from supplementary set.
- Screw spring retainer very lightly onto spring compressor as far as stop and then slacken off slightly again.



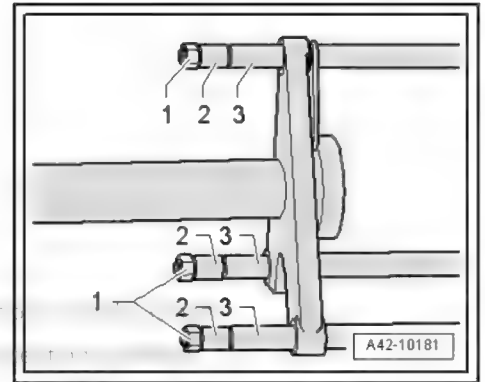
- Insert new rods with long taper -1- into plate on spring compressor.
- While doing so, insert upper rod through plate -2-.
- Fit spring retainer plate onto rods.



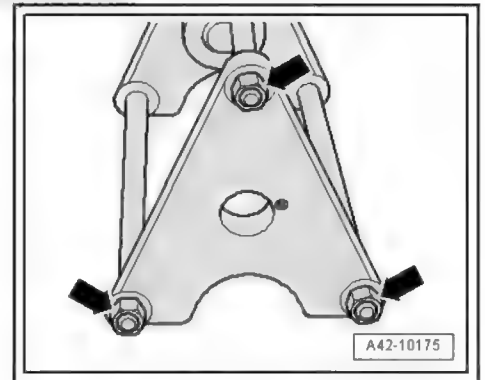




- Fit sleeves -2- and -3- from supplementary set and lightly tighten nuts -1-.





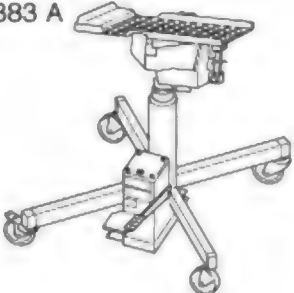
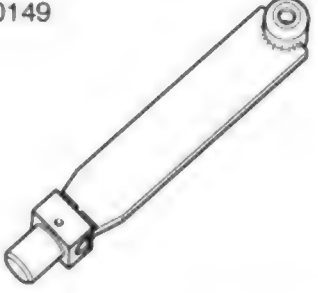
- Place spring compressor down on a flat surface and tighten nuts -arrows-.



### 5.3 Removing and installing shock absorber



# Special tools and workshop equipment required

<p>V.A.G 1331</p> 	<p>V.A.G 1332</p> 
<p>V.A.G 1383 A</p> 	<p>T10149</p> 
	<p>G42-10003</p>

- ◆ Torque wrench - V.A.G 1331-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Engine and gearbox jack - VAS 6931- or -V.A.G 1383 A-
- ◆ Support - T10149-

## Removing

- Before starting work, measure distance from centre of wheel to lower edge of wheel housing  
⇒ ["3.14 Lifting suspension to unladen position - vehicles with coil springs", page 12](#) or  
⇒ ["3.15 Lifting suspension to reference position \(vehicles with air suspension\)", page 15](#) .
- Remove rear wheel ⇒ [page 329](#) .
- Remove wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (rear) .
- Turn the wheel hub until one of the bores for the wheel bolts is at the top.



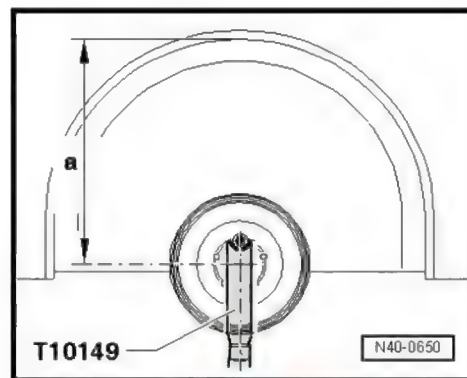


- Attach support - T10149- with wheel bolt, as shown in illustration.
- Fit support - T10149- in engine and gearbox jack - V.A.G 1383 A- and raise wheel bearing housing slightly.



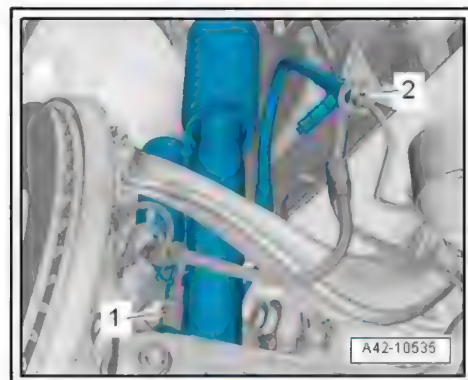
Note

*Dimension -a- can be disregarded.*



#### Vehicles with Dynamic Ride Control (DRC)

- Discharge DRC system ➔ [page 318](#) .
- If vehicle is equipped with driver-adjustable DRC and variable damping, detach electrical connector -1- (on additional element with integral DC motor) from bracket, unplug connector and move clear.
- Remove union screw -2- and move hose clear.
- Protect open connections from dirt.

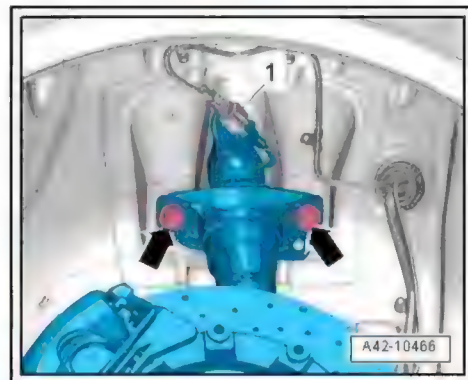


#### Vehicles with electronic damping control:

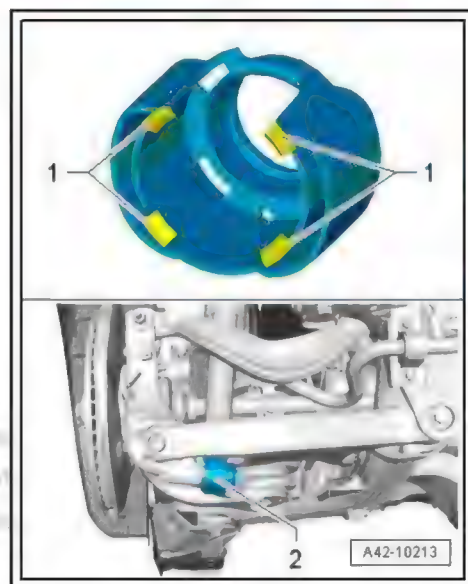
- If fitted, release and unplug electrical connector -1-.

#### All vehicles (continued):

- Remove bolts -arrows-.



- If shock absorber is to be renewed, unclip retaining tabs -1- and detach stone deflector -2-.



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- Remove bolt -arrow- and detach washer between wheel bearing housing and shock absorber.
- Compress shock absorber as far as possible and guide out from above.

#### Installing

Installation is carried out in reverse sequence. Note the following:

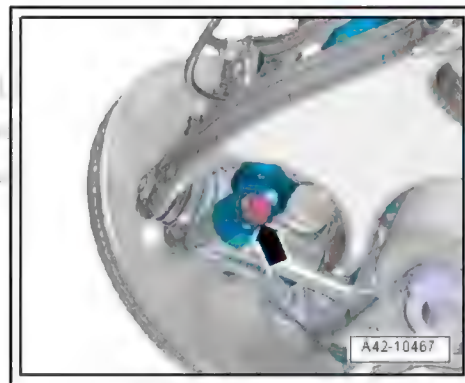


#### Note

- ◆ *Bonded rubber bushes can only be turned to a limited extent. The suspension mountings must therefore only be tightened when the suspension is in the unladen position or reference position.*
- ◆ *Raising suspension to unladen position (vehicles with coil springs) ⇒ [page 12](#)*
- ◆ *Raising suspension to reference position (vehicles with air suspension) ⇒ [page 15](#)*
- Install wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (rear) .
- Fit rear wheel ⇒ [page 329](#) .

#### Tightening torques

- ◆ ⇒ [“5.1 Exploded view - suspension strut/shock absorber, spring”, page 215](#)







## 5.4 Servicing shock absorber

⇒ "5.4.1 Servicing shock absorber, conventional version / vehicles with DRC system", page 227

⇒ "5.4.2 Servicing shock absorber, version with variable damping", page 228

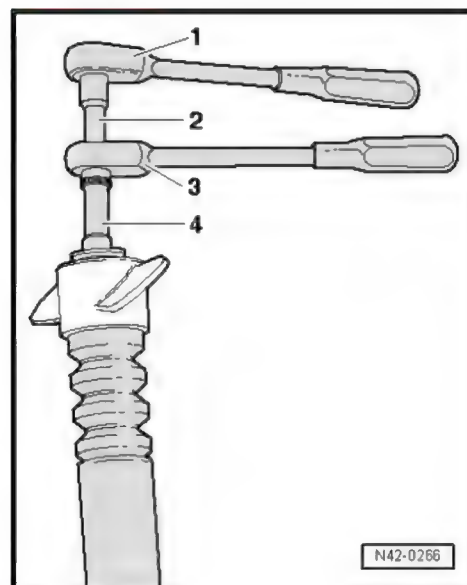
### 5.4.1 Servicing shock absorber, conventional version / vehicles with DRC system

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1332-



- ◆ Shock absorber tool set - T10001-



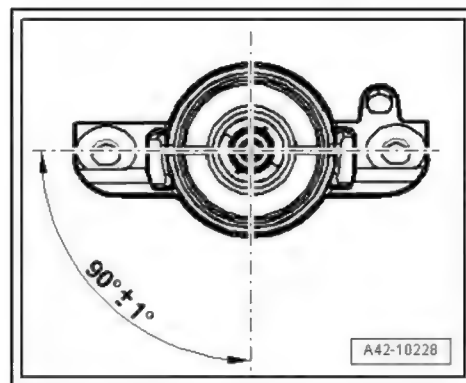
Unscrewing and tightening nut

- 1 - Commercially available ratchet
- 2 - Tool insert - T10001/9-
- 3 - Ratchet - T10001/11-
- 4 - Tool insert - T10001/1-



#### Installation position of shock absorber mounting (top)

- Bolt on top shock absorber mounting at a 90° angle to bottom shock absorber mounting.



### 5.4.2 Servicing shock absorber, version with variable damping

#### Special tools and workshop equipment required

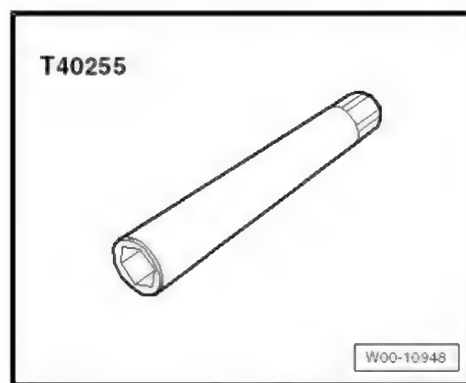
- ◆ Torque wrench - V.A.G 1332-



- ◆ Shock absorber tool set - T10001-



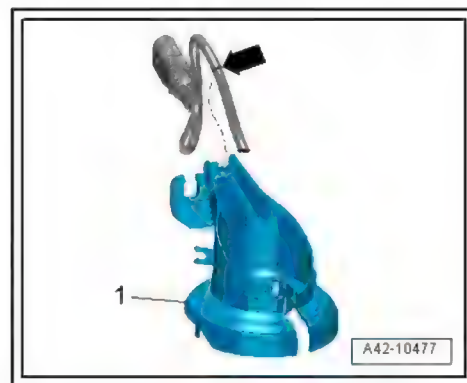
- ◆ Counterhold tool -T40255-





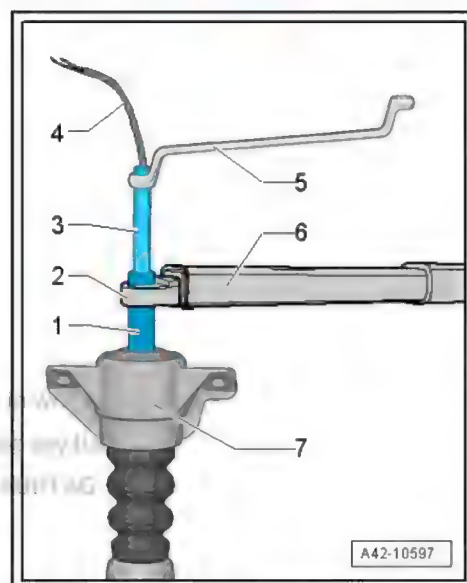
## Procedure

- Release and detach protective cap ➔ [Item 5 \(page 219\)](#) .
- Move clear electrical wire -arrow- and detach protective cap -1- from shock absorber mounting (top).
- Release contacts and detach connector housing from electrical wire ➔ Electrical system; Rep. gr. 97 ; Releasing and dismantling connector housings .



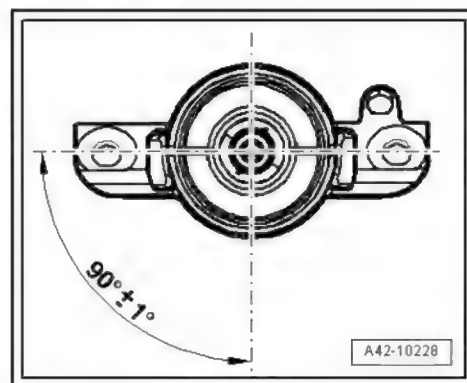
## Unscrewing and tightening nut

- 1 - Tool insert - T10001/3-
- 2 - Ring spanner insert - V.A.G 1332/7-
- 3 - Tool insert - T40255-
- 4 - Wiring
- 5 - Ring spanner (commercially available type)
- 6 - Torque wrench - V.A.G 1332-
- 7 - Shock absorber mounting



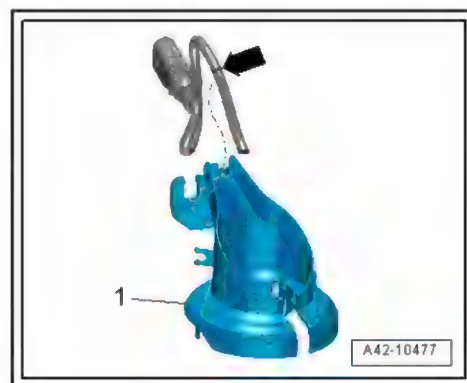
## Installation position of shock absorber mounting (top)

- Bolt on top shock absorber mounting at a 90° angle to bottom shock absorber mounting.



## Installation position of electrical wiring on shock absorber with electronic damping control

- The marking -arrow- on the electrical wiring must engage in the protective cap -1-, as shown in the illustration.
- Do not kink or twist wire when attaching connector.





## 5.5 Removing and installing spring

⇒ "5.5.1 Removing and installing coil spring", page 230

⇒ "5.5.2 Removing and installing air spring", page 238

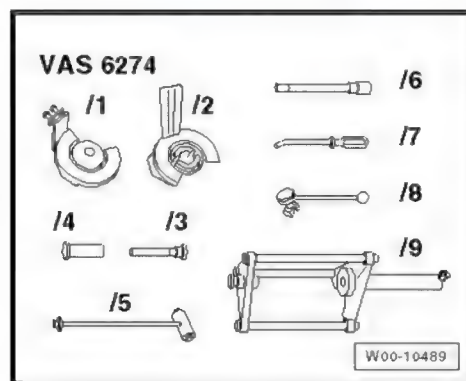
### 5.5.1 Removing and installing coil spring

Special tools and workshop equipment required

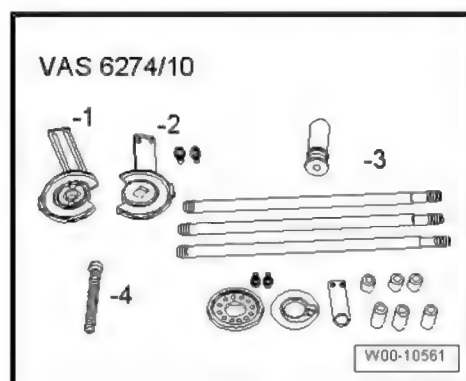
◆ Foot pump - VAS 6179-



◆ Spring compressing system - VAS 6274-



◆ Supplementary set - VAS 6274/10-



#### NOTICE

Before removing and installing the coil spring, the spring compressing system - VAS 6274- must be modified with supplementary set - VAS 6274/10- .

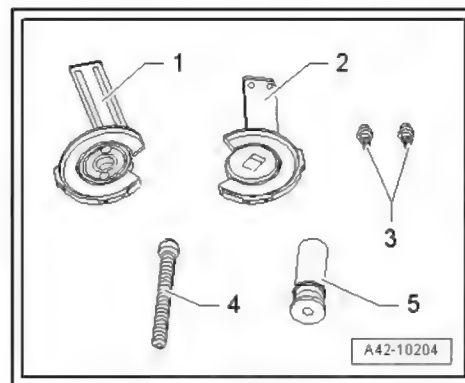
Modifying spring compressing system - VAS 6274- with supplementary set - VAS 6274/10- ⇒ [page 220](#) .



**i** Note

*In the following operations the remaining tools from the supplementary set - VAS 6274/10- are required.*

- 1 - Thrust plate with swivel mounting - VAS 6274/10-1-
- 2 - Thrust plate with securing plate - VAS 6274/10-2-
- 3 - Bolts for locating bracket
- 4 - Spindle - VAS 6274/10-4-
- 5 - Sleeve

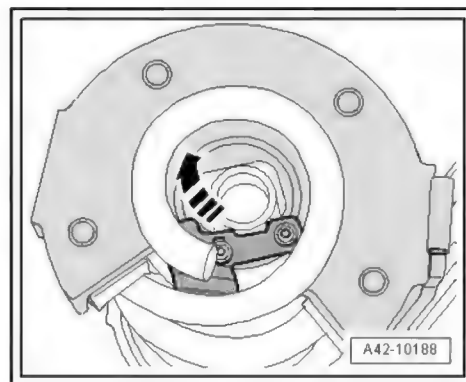


Removing

- Remove rear wheel ➔ [page 329](#) .
- If necessary, push back locking lever in opposite direction of -arrow-.

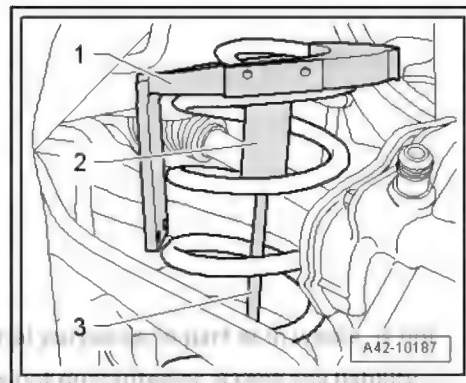
**i** Note

*For greater clarity, the stone deflector is removed in the following illustrations.*

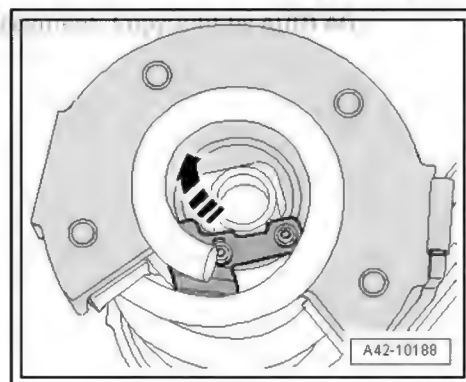


- Working from the outside, insert new thrust plate with securing plate - VAS 6274/10-2- with locating bracket from supplementary set.

- 1 - Thrust plate with securing plate - VAS 6274/10-2-
- Insert plunger -2- with T-bar -3- into thrust plate. To do so, push back locking lever on thrust plate outwards (to open) as necessary.



- Press locking lever in direction of -arrow- to secure plunger.
- Rotate thrust plate with securing plate all the way up.





- Insert new thrust plate with swivel mounting - VAS 6274/10-1- with locating bracket from supplementary set from the inside.

1 - Thrust plate with swivel mounting - VAS 6274/10-1-

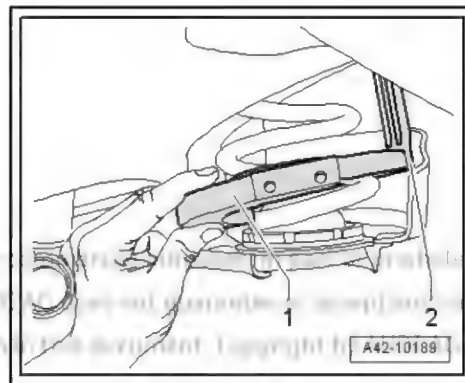
Locating bracket -2- must be bolted on at front, as seen in direction of travel.

- Rotate thrust plate with swivel mounting all the way down.

**NOTICE**

Before removing and installing any of the springs, always lubricate the front of the spindle lightly with the grease supplied.

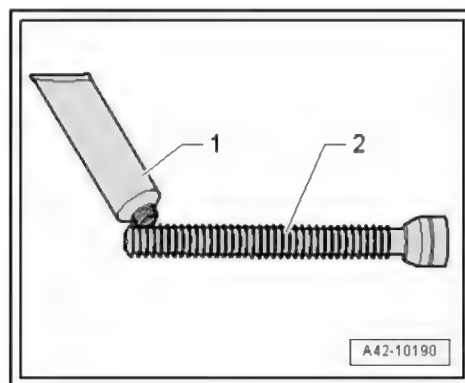
Lubricate the spindle only with the grease supplied. If other greases are used the spindle will be damaged.



- Lubricate the front of the new spindle - VAS 6274/10-4- lightly with the grease supplied.

1 - Grease tube from spring compressing system - VAS 6274- or from supplementary set - VAS 6274/10-

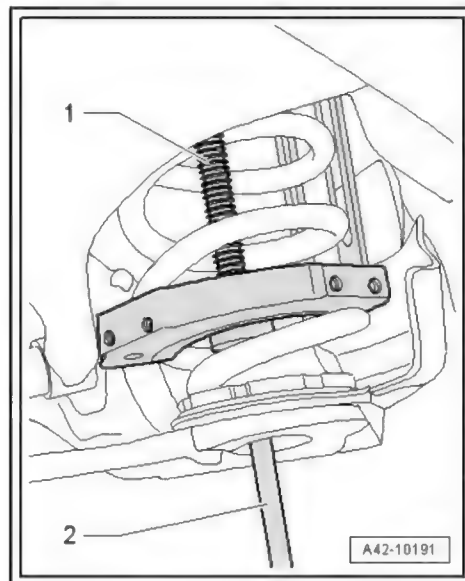
2 - Spindle - VAS 6274/10-4-



- Hand-tighten new spindle - VAS 6274/10-4- using socket - VAS 6274/6- .

1 - Spindle - VAS 6274/10-4-

2 - Socket - VAS 6274/6-





- Bolt the locating brackets -1- and -2- of the two thrust plates together.
- Screw in new bolts -3- hand-tight to do so.

**CAUTION**

The coil spring must be compressed or released only when the two locating brackets -1- and -2- are joined together by the two bolts -3-.

- First pre-tension thrust plates slightly using new spindle - VAS 6274/10-4- .
- Check that coil spring is correctly seated in thrust plates.



**Note**

*When compressing the coil spring, the locating brackets must be pointing forwards (in direction of travel).*

- Compress coil spring with socket - VAS 6274/6- (use counterhold tool - VAS 6274/7- ).

1 - Counterhold tool - VAS 6274/7-

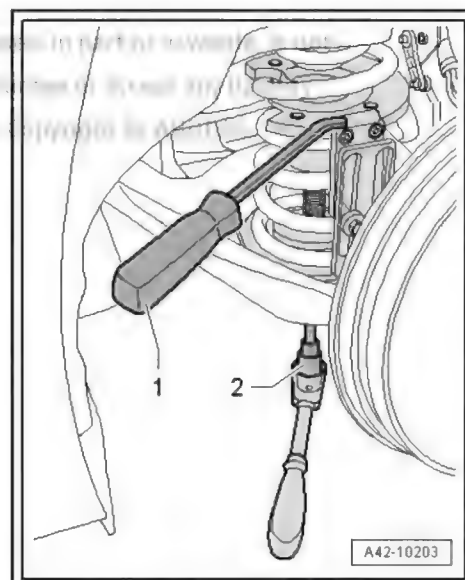
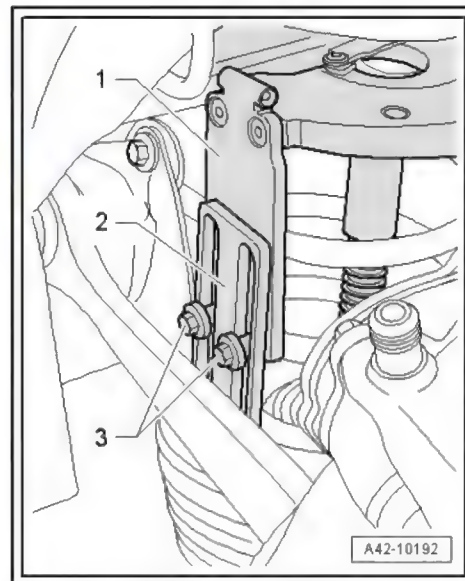
2 - Socket - VAS 6274/6-



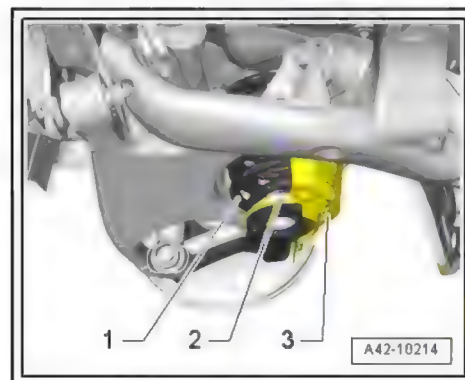
**NOTICE**

Do not use impact wrenches to compress the coil spring.

Use a standard commercially available ratchet to compress the spring.



- Compress coil spring -1- until stone deflector -3- and bottom spring plate -2- can be taken out. Compress coil spring -1- further if necessary.



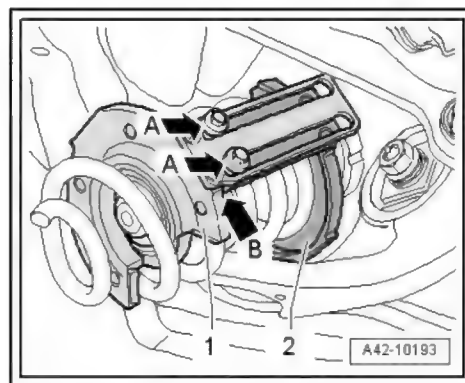


# **NOTICE**

When compressing the coil spring, make sure the bolts -arrows A- do not make contact with the stop on the thrust plate -1-.

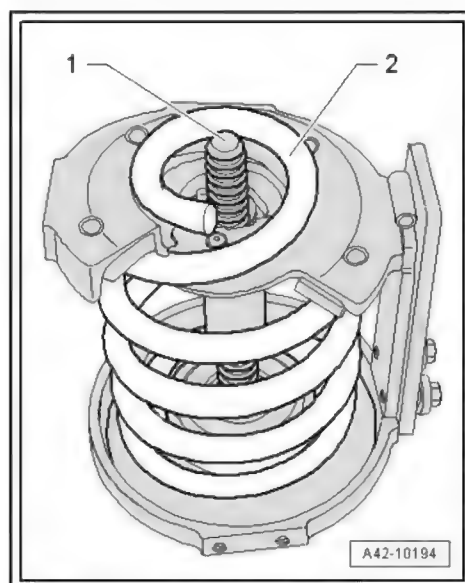
Similarly, the locating bracket on the thrust plate -2- must not make contact with the stop -arrow B- on the thrust plate -1-.

- Remove coil spring downwards and forwards.

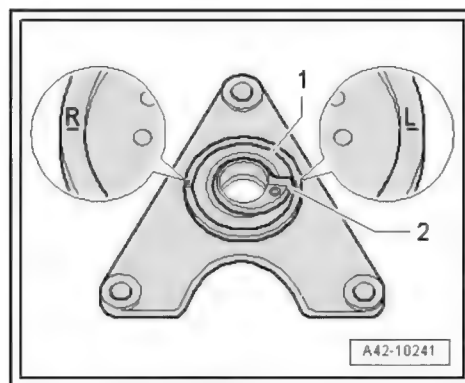


## Slackening coil spring in spring compressing system - VAS 6274-

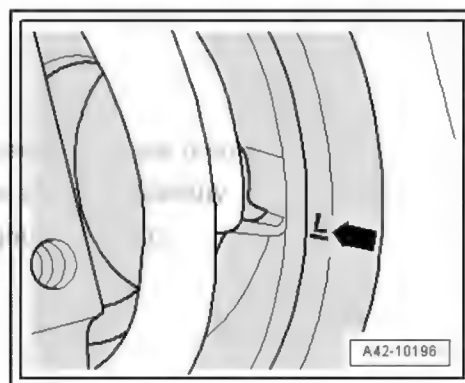
- Slacken off spindle -1- slightly if necessary. Spindle -1- must not protrude beyond end of coil spring -2-.



- Insert left coil spring in spring retainer -1- so that stop -2- is opposite marking "L". This only applies to coil spring on left side of vehicle.
- For coil spring on right side of vehicle, stop -2- must be opposite marking "R".



- Position underside of end of left coil spring in spring compressing system - VAS 6274- at marking "L" -arrow-.
- Position underside of end of right coil spring in spring compressing system - VAS 6274- at marking "R".



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- Apply marking -1- using a felt-tip pen or similar.



#### Note

*The marking -1- is required when compressing the spring during installation.*

- Locating element -2- faces upwards.

- Lightly hand-tighten bolts -1-.

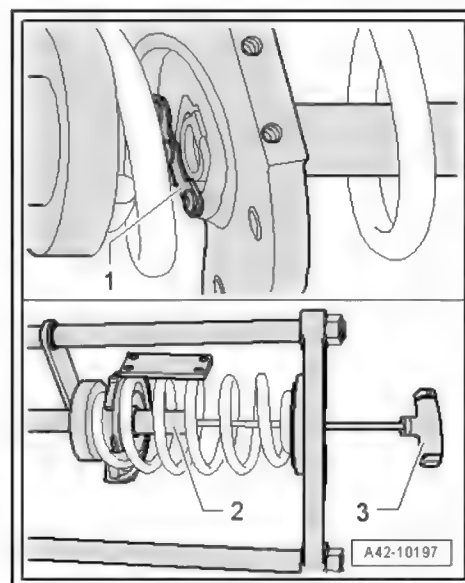
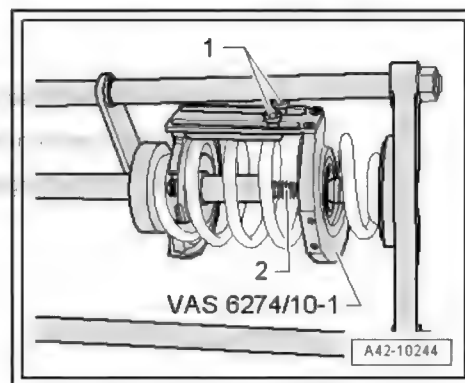
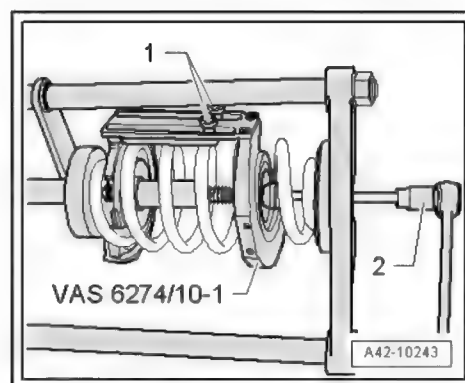
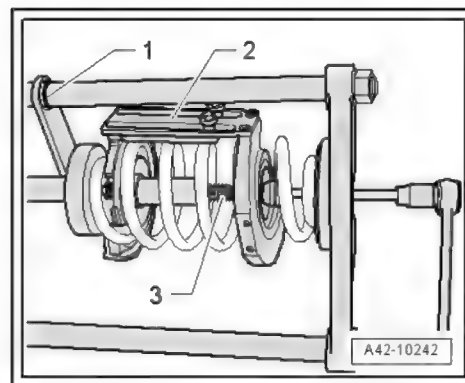
2 - Socket - VAS 6274/6-

- Slacken coil spring using socket - VAS 6274/6- . At the same time slacken coil spring via spring compressing system - VAS 6274- and foot pump - VAS 6179- .



- When coil spring has been slackened, unscrew spindle -2-.
- Remove bolts -1- from locating bracket and take out thrust plate with swivel mounting - VAS 6274/10-1-

- Push back locking lever -1-.
- Remove plunger -2- with T-bar -3-.
- Release coil spring completely.





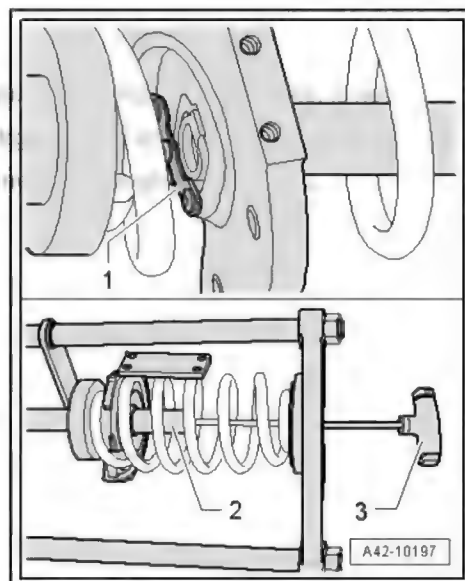
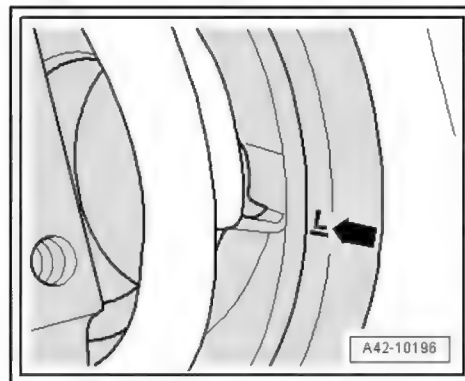
## Installing

Installation is carried out in reverse sequence. Note the following:

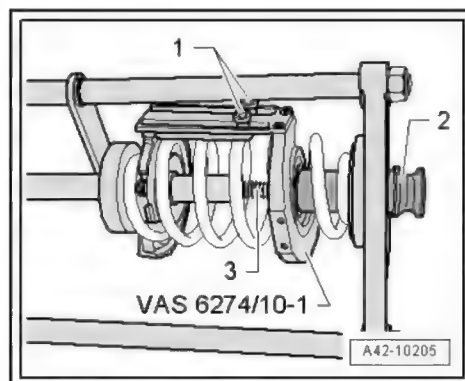
- Insert bottom of coil spring into spring compressing system - VAS 6274- ; installation position ➔ [page 216](#) .
- Position end of left coil spring in spring compressing system - VAS 6274- at marking "L" -arrow-.
- Position end of right coil spring in spring compressing system - VAS 6274- at marking "R".



- Fit thrust plate with securing plate - VAS 6274/10-2- and install plunger -2- with T-bar -3-.
- Secure plunger -2- with locking lever +1-.



- Fit thrust plate with swivel mounting - VAS 6274/10-1- .
- Screw in bolts for locating bracket -1- loosely.
- Insert spindle -3-.
- Insert sleeve -2- as far as it will go.







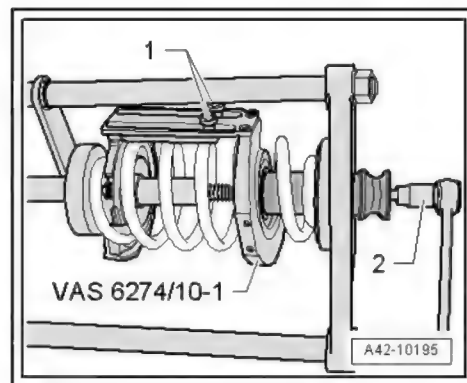
- Lightly hand-tighten bolts -1- for locating bracket. Locating element must be pointing upwards when compressing coil spring.
- Compress coil spring using socket - VAS 6274/6- , At the same time apply pressure via spring compressing system - VAS 6274- and foot pump - VAS 6179- .

2 - Socket - VAS 6274/6-

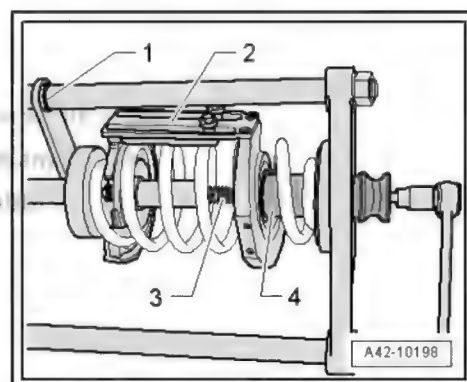


When compressing the coil spring, make sure the bolts on the locating bracket do not make contact with the stop on the thrust plate with swivel mounting - VAS 6274/10-1- .

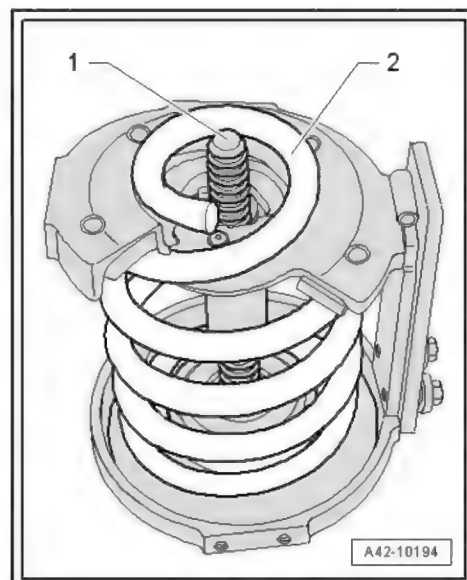
Similarly, the locating bracket on the thrust plate with securing plate - VAS 6274/10-2- must not make contact with the stop on the thrust plate with swivel mounting - VAS 6274/10-1- .



- Compress coil spring only as far as marking -1- made previously. Locating element -2- must be pointing upwards.
- When using spindle -3- to compress coil spring, make sure that sleeve -4- does not slip out of thrust plate with swivel mounting - VAS 6274/10-1- .
- Release spring compressing system - VAS 6274- and take out coil spring together with spring compressor.

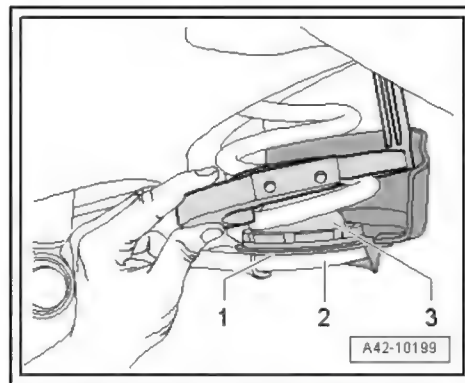


- If necessary, use spindle -1- to compress coil spring -2- further.
- Spindle -1- must not protrude too far beyond coil spring -2- otherwise it will not be possible to position top spring plate properly on coil spring.



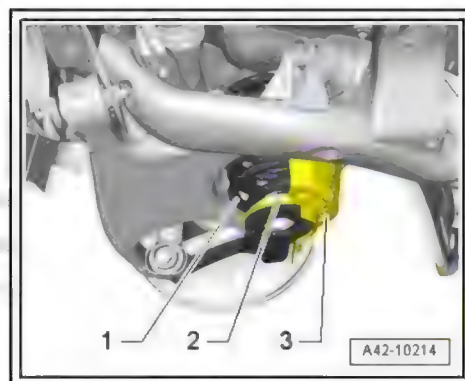


- Position coil spring with bottom spring plate -3- and stone deflector -1- on wheel bearing housing -2-; installation position ➔ [page 216](#) .
- Check that top spring plate is installed; installation position of eccentric spring plate ➔ [page 216](#) . Install if necessary.



- Screw coil spring -1- into bottom spring plate -2- as far as stop.
- Then release coil spring.
- Fit rear wheel ➔ [page 329](#) .
- Check and adjust wheel alignment as required, see chart ➔ [page 344](#) .

Wheel alignment must always be checked and adjusted if necessary using VW/Audi-approved equipment.



## 5.5.2 Removing and installing air spring

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



- ◆ Torque wrench - V.A.G 1332-







## Removing



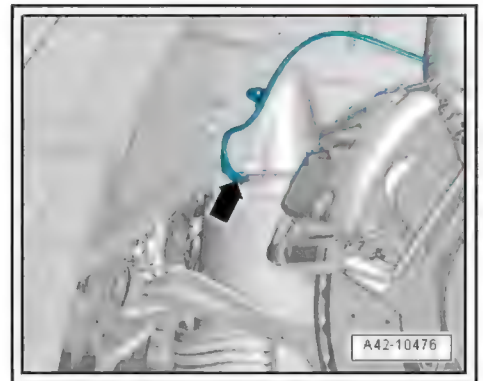
### Note

- ◆ *Make sure that no dirt enters the compressed air system.*
- ◆ *Clean the affected area before detaching connection pieces for air pipes or components of the compressed air system.*
- ◆ *Cover or seal off open air pipes and connections of the compressed air system immediately with a plug.*
- Bleed air springs of rear axle ⇒ [page 284](#) .
- Remove wheel ⇒ [page 329](#) .
- Remove diagonal strut (if fitted) ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing diagonal struts .
- Unscrew connection piece -arrow- on rear air spring.
- Detach stone deflector ⇒ [Item 3 \(page 217\)](#) .
- Take out air spring from below.

## Installing

Installation is carried out in reverse sequence. Note the following:

- Install diagonal struts (if previously fitted) ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing diagonal struts .
- Charge air springs of rear axle ⇒ [page 284](#) .



### Note

- ◆ *The vehicle must not be lowered from the lifting platform until the system has been recharged ⇒ [page 18](#) .*
- ◆ *Before charging air spring, check that locating pin on air spring is engaged correctly in body. At the same time the retainers on the air spring must be correctly engaged under the wheel bearing housing ⇒ [page 217](#) .*

## Tightening torques

- ◆ ⇒ ["3.3 Exploded view - air pipes", page 293](#)



## 6 Wheel bearing, trailing arm

⇒ "6.1 Exploded view - wheel bearing", page 240

⇒ "6.2 Removing and installing wheel bearing housing",  
page 243

⇒ "6.3 Removing and installing wheel bearing unit", page 250

⇒ "6.4 Servicing wheel bearing unit", page 254

⇒ "6.5 Renewing bonded rubber bushes for wheel bearing housing", page 258

### 6.1 Exploded view - wheel bearing

⇒ "6.1.1 Exploded view - wheel bearing, front-wheel drive vehicles  
not including e-tron vehicles", page 240

⇒ "6.1.2 Exploded view - wheel bearing housing, four-wheel drive  
vehicles and e-tron vehicles", page 242

#### 6.1.1 Exploded view - wheel bearing, front-wheel drive vehicles not including e-tron vehicles

##### 1 - Bolt

- 10 Nm

##### 2 - Splash plate

- For brake disc

##### 3 - Bonded rubber bush

- Renewing ⇒ page 262

##### 4 - Wheel bearing housing

- Removing and installing  
⇒ page 243

##### 5 - Rear speed sensor

- Left-side: Rear left  
speed sensor - G46-
- Right-side: Rear right  
speed sensor - G44-

##### 6 - Bolt

- Tightening torque ⇒  
Brake system; Rep. gr.  
45 ; Sensors; Exploded  
view - rear wheel speed  
sensor

##### 7 - Additional seal

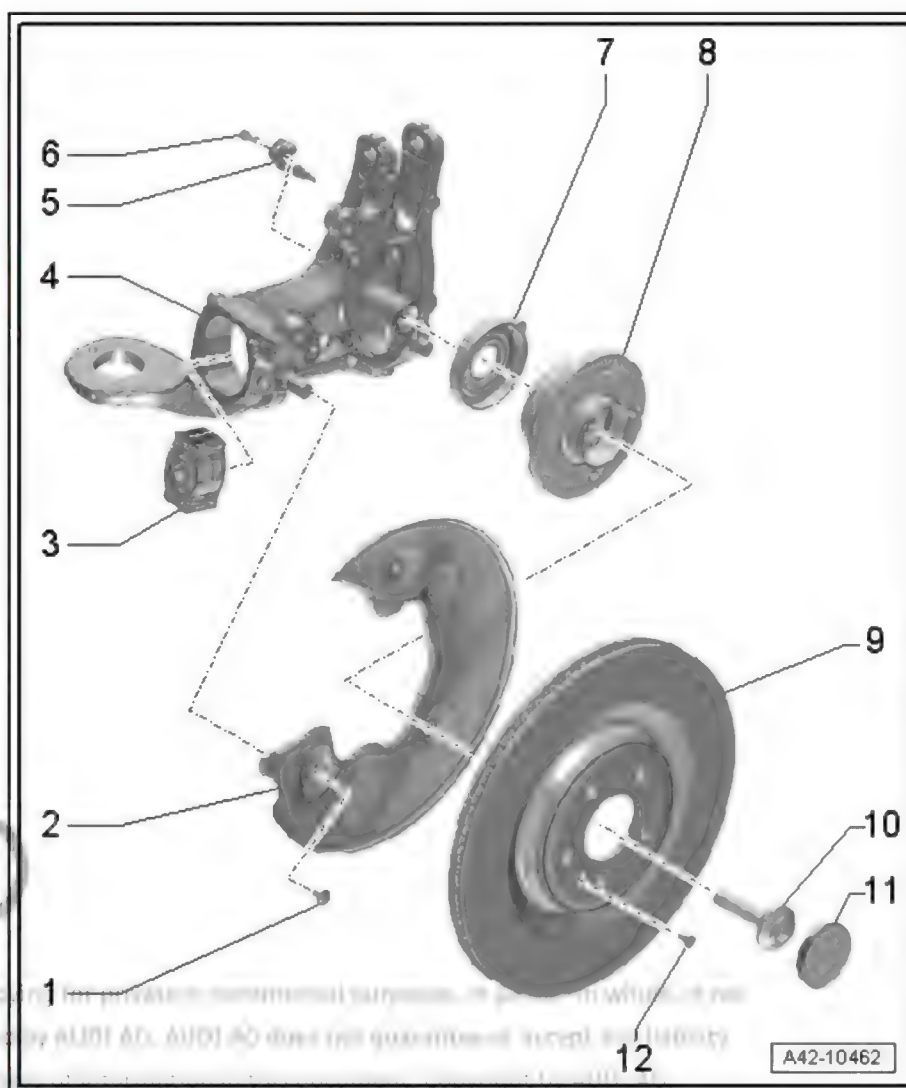
##### 8 - Wheel hub

- Removing and installing  
wheel bearing unit  
⇒ page 253
- Servicing wheel bearing  
unit ⇒ page 254

##### 9 - Brake disc

##### 10 - Bolt

- 200 Nm +180°
- Always renew if re-  
moved







- ❑ Observe instructions for loosening and tightening ➔ [page 269](#)

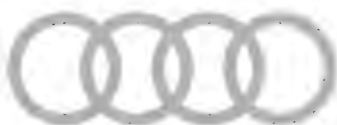
#### 11 - Grease cap

#### 12 - Bolt

- ❑ Tightening torque ➔ Brake system; Rep. gr. 46 ; Rear brakes; Exploded view - rear brake

Avoiding dirtying or damaging the seal when laying it down or placing it in storage

- The wheel bearing -1- must always be pointing upwards.
- Always put down the wheel bearing unit with the wheel hub -2- facing downwards.



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## 6.1.2 Exploded view - wheel bearing housing, four-wheel drive vehicles and e-tron vehicles

### 1 - Bolt

- ☐ 10 Nm

### 2 - Splash plate

- ☐ For brake disc

### 3 - Bonded rubber bush

- ☐ Renewing ⇒ [page 262](#)

### 4 - Wheel bearing housing

- ☐ Removing and installing ⇒ [page 246](#)

### 5 - Bolt

- ☐ 80 Nm +90°
- ☐ Always renew if removed

### 6 - Drive shaft

- ☐ Different versions available ⇒ Electronic parts catalogue
- ☐ e-tron: constant velocity joint instead of drive shaft

### 7 - Rear speed sensor

- ☐ Left-side: Rear left speed sensor - G46-
- ☐ Right-side: Rear right speed sensor - G44-

### 8 - Bolt

- ☐ Tightening torque ⇒ Brake system; Rep. gr. 45 ; Sensors; Exploded view - rear wheel speed sensor

### 9 - Wheel bearing

- ☐ Removing and installing wheel bearing unit ⇒ [page 253](#)
- ☐ Servicing wheel bearing unit ⇒ [page 254](#)

### 10 - Wheel hub

- ☐ Removing and installing wheel bearing unit ⇒ [page 253](#)
- ☐ Servicing wheel bearing unit ⇒ [page 254](#)

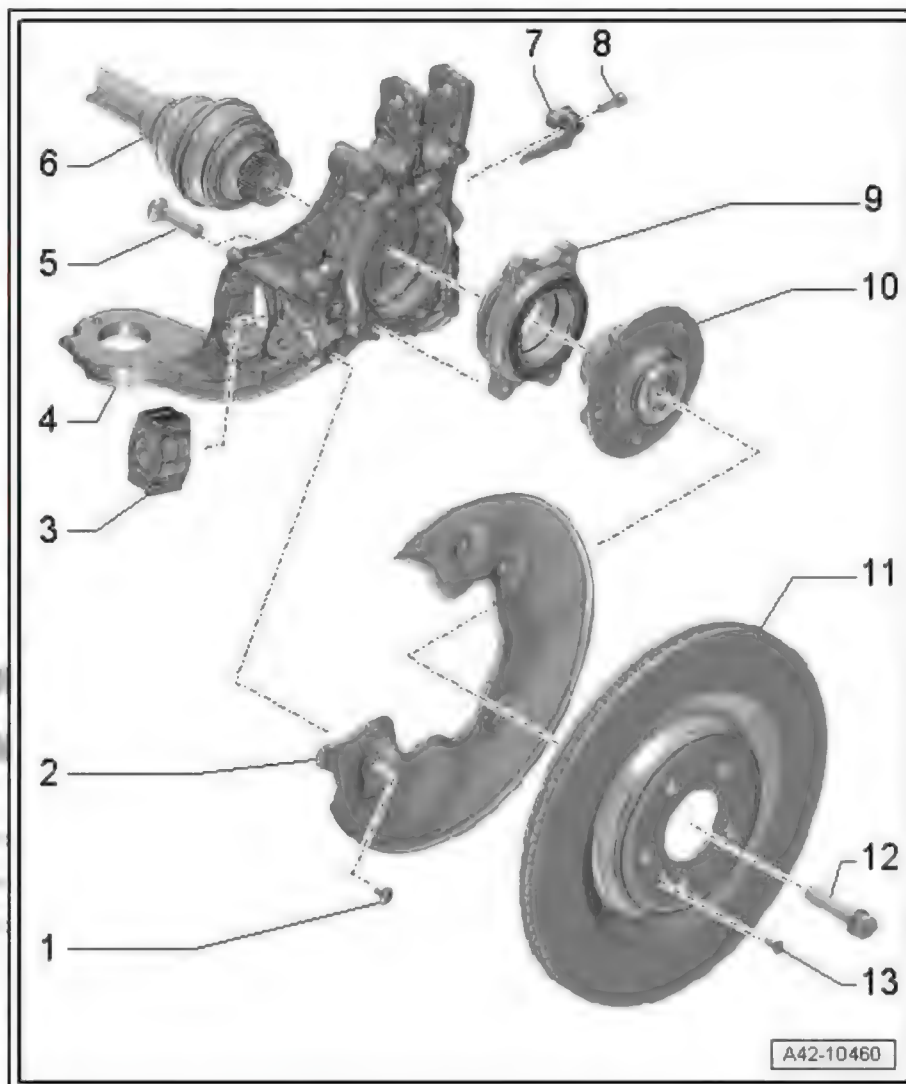
### 11 - Brake disc

### 12 - Bolt

- ☐ Tightening torque ⇒ [Item 14 \(page 268\)](#)

### 13 - Bolt

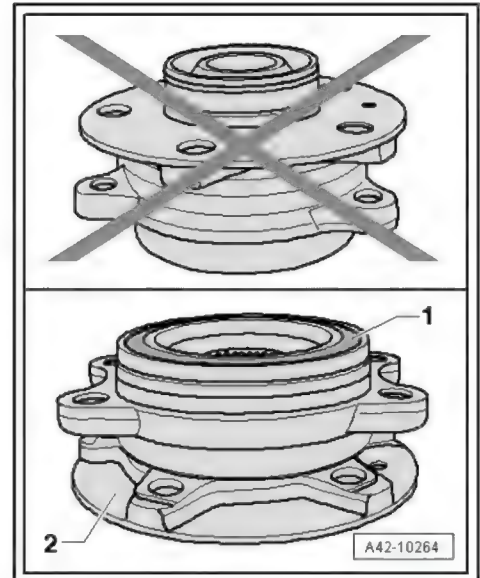
- ☐ Tightening torque ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Exploded view - rear brake





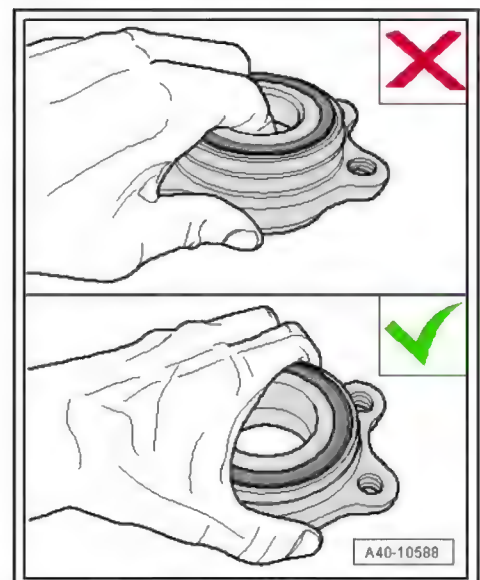
Avoid dirtying or damaging the seal when picking up, laying down or storing the wheel bearing

- Wheel bearing -1- must always face upwards.
- Always put down the wheel bearing unit with the wheel hub -2- facing downwards.



- Do not touch the inside of the wheel bearing when you pick it up.
- Always take hold of the outside of the wheel bearing.

The same procedure applies to the wheel bearing without wheel hub.



## 6.2 Removing and installing wheel bearing housing

⇒ [“6.2.1 Removing and installing wheel bearing housing, front-wheel drive vehicles not including e-tron vehicles”, page 243](#)

⇒ [“6.2.2 Removing and installing wheel bearing housing, four-wheel drive and e-tron vehicles”, page 246](#)

### 6.2.1 Removing and installing wheel bearing housing, front-wheel drive vehicles not including e-tron vehicles

Special tools and workshop equipment required





◆ Torque wrench - V.A.G 1332-



◆ Torque wrench - V.A.G 1410-



◆ Lubricating paste

Removing

- Remove rear wheel ⇒ [page 329](#) .
- Release and unplug connector -2- at rear speed sensor.
- Remove bolt -1- and detach bracket with wiring from wheel bearing housing.



After detaching brake caliper, secure caliper to body so that weight of caliper does not stretch or damage brake hose or brake pipe.

Do not press brake pedal after brake caliper has been removed.

- Unbolt brake caliper and brake disc, guide caliper past suspension and secure to body ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Removing and installing brake disc .

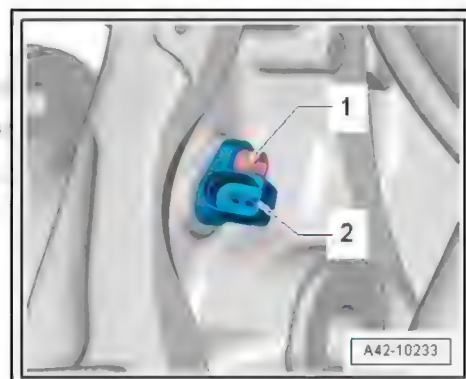
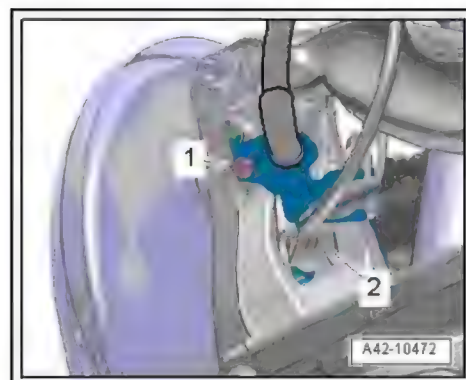
- Remove bolt -1- and take off rear speed sensor -2-.

Vehicles with coil springs:

- Remove coil spring ⇒ [page 230](#) .

Vehicles with air suspension:

- Remove air spring ⇒ [page 238](#) .

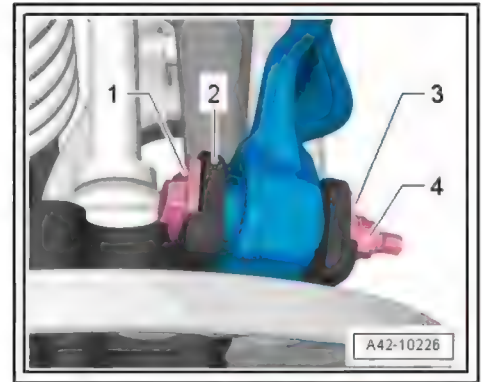




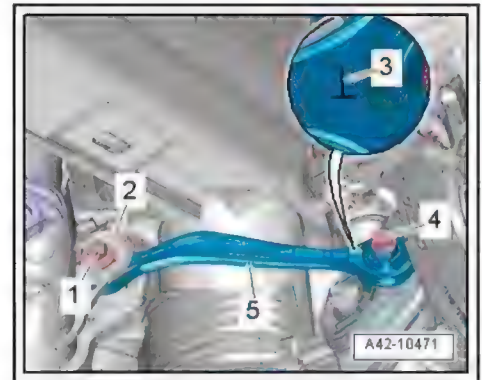


All vehicles (continued):

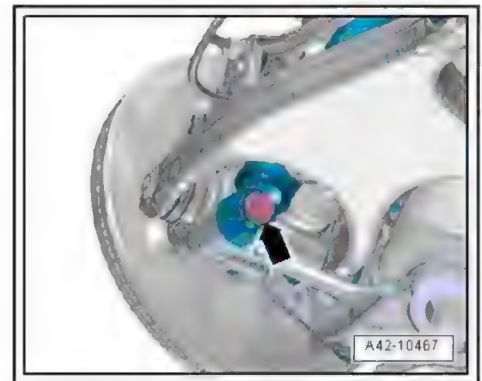
- Mark installation position of adjuster screw -1- relative to wheel bearing housing -2-.
- Unscrew nut -4- and take off shim -3-.
- Remove adjuster screw.



- Remove bolt -4-.



- Remove bolt -arrow- and detach washer between wheel bearing housing and shock absorber.



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- Unscrew nut -3-.
- Pull out bolt -1- and detach spacer -2-.
- Take off wheel bearing housing.

#### Installing

Installation is carried out in reverse sequence. Note the following:



#### Note

- ◆ *Bonded rubber bushes can only be turned to a limited extent. The suspension mountings must therefore only be tightened when the suspension is in the unladen position or reference position.*
- ◆ *Raising suspension to unladen position (vehicles with coil springs) ⇒ [page 12](#)*
- ◆ *Raising suspension to reference position (vehicles with air suspension) ⇒ [page 15](#)*
- Fit wheel bearing housing.
- Fit bolt -1- with spacer -2- and screw on nut -3- loosely.



#### Notice

The bolted connection must not be tightened by the nut -3-.

- Tighten bolt -1-.
- Install coil spring ⇒ [page 230](#) or air spring ⇒ [page 238](#) .
- Install brake caliper and brake disc ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Removing and installing brake disc .
- Install track rod ⇒ [page 212](#) .
- Install upper transverse link ⇒ [page 205](#) .
- Install lower transverse link ⇒ [page 207](#) .
- Install speed sensor (rear) ⇒ Brake system; Rep. gr. 45 ; Sensors; Removing and installing rear speed sensors -G44- / -G46- .
- Fit rear wheel ⇒ [page 329](#) .
- Check and adjust wheel alignment as required, see chart ⇒ [page 344](#) .

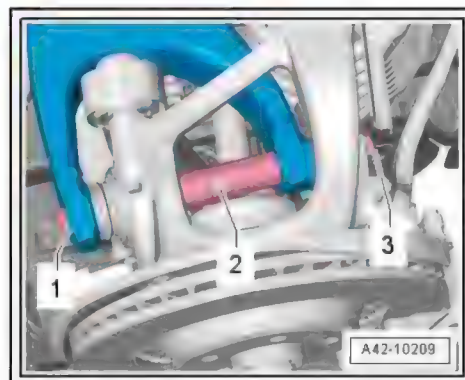
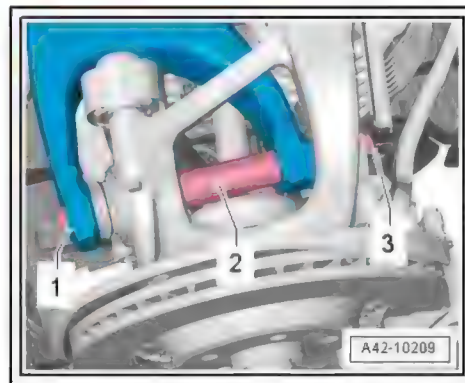
Wheel alignment must always be checked and adjusted if necessary using VW/Audi-approved equipment.

#### Tightening torques

- ◆ ⇒ [“6.1.1 Exploded view - wheel bearing, front-wheel drive vehicles not including e-tron vehicles”](#), [page 240](#)

## 6.2.2 Removing and installing wheel bearing housing, four-wheel drive and e-tron vehicles

Special tools and workshop equipment required







◆ Torque wrench - V.A.G -

V.A.G 1332



W00-11165

◆ Torque wrench - V.A.G 1410-

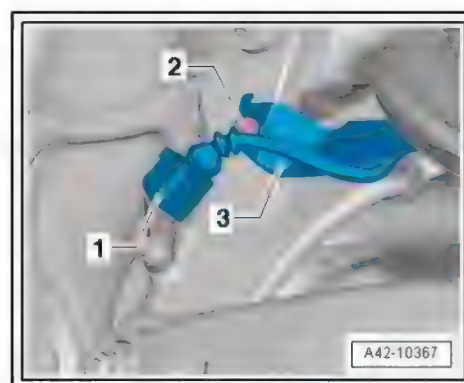
V.A.G 1410



W00-11174

Removing

- Vehicles with four-wheel drive: Loosen bolt securing drive shaft to wheel hub ⇒ [page 269](#) .
- e-tron: Release constant velocity joint/wheel hub connection ⇒ [page 269](#) .
- Remove rear wheel ⇒ [page 329](#) .
- Release and unplug connector -1- from rear left speed sensor - G46- or rear right speed sensor - G44- .
- If fitted, remove bolt -2- and detach bracket -3- with wiring.



A42-10367

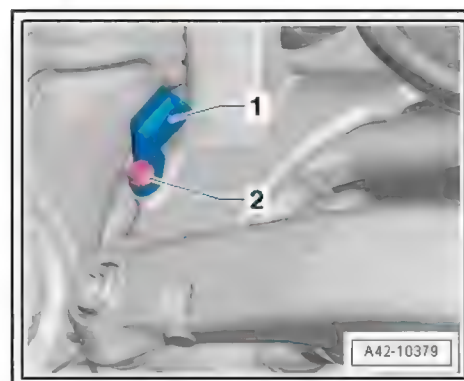
- Remove bolt -2- and take off rear speed sensor -1-.



After detaching brake caliper, secure caliper to body so that weight of caliper does not stretch or damage brake hose or brake pipe.

Do not press brake pedal after brake caliper has been removed.

- Unbolt brake caliper and brake disc from wheel bearing housing, guide past suspension and secure to body ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Removing and installing brake disc .



A42-10379





- Remove bolts -1- and detach splash plate -2-.

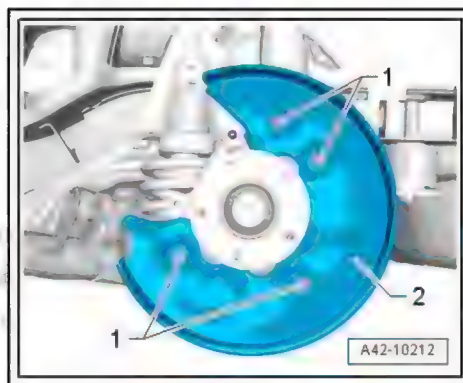
Vehicles with coil springs:

- Remove coil spring ➔ [page 230](#).

Vehicles with air suspension:

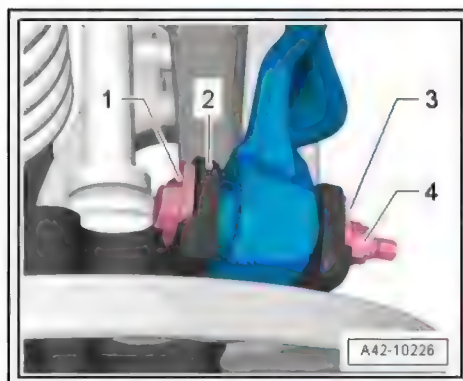
- Remove air spring ➔ [page 238](#).

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All vehicles (continued):

- Mark installation position of adjuster screw -1- relative to wheel bearing housing -2-.
- Unscrew nut -4- and take off shim -3-.
- Remove adjuster screw.

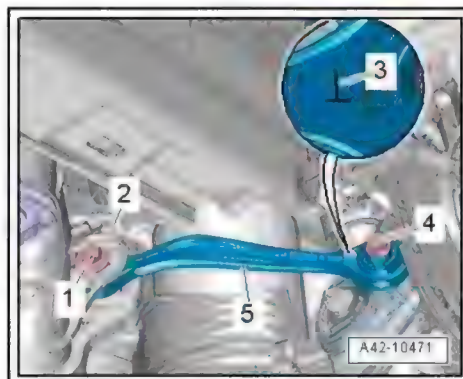


- Remove bolt -4-.

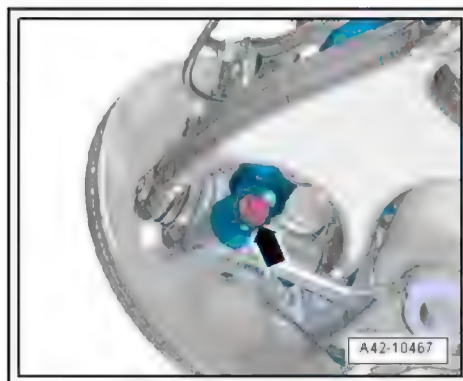


Note

Disregard -items 1, 2, 3, 5-.



- Remove bolt -arrow- and detach washer between wheel bearing housing and shock absorber.







- Unscrew nut -3-.
- Pull out bolt -1- and detach spacer -2-.
- Pivot wheel bearing housing to the side and pull drive shaft out of wheel bearing housing.
- Take out wheel bearing housing.

#### Installing

Installation is carried out in reverse sequence. Note the following:



#### Note

- ◆ *Bonded rubber bushes can only be turned to a limited extent. The suspension mountings must therefore only be tightened when the suspension is in the unladen position or reference position.*
- ◆ *Raising suspension to unladen position (vehicles with coil springs) ⇒ [page 12](#)*
- ◆ *Raising suspension to reference position (vehicles with air suspension) ⇒ [page 15](#)*

- Fit wheel bearing housing.
- Fit bolt -1- with spacer -2- and screw on nut -3- loosely.



#### NOTICE

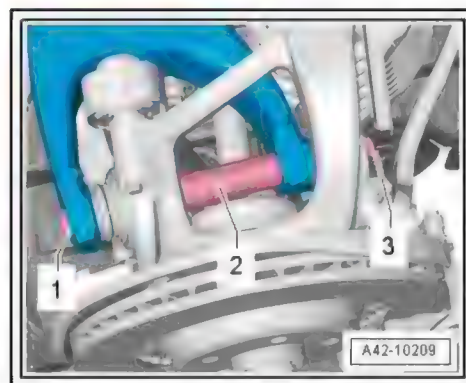
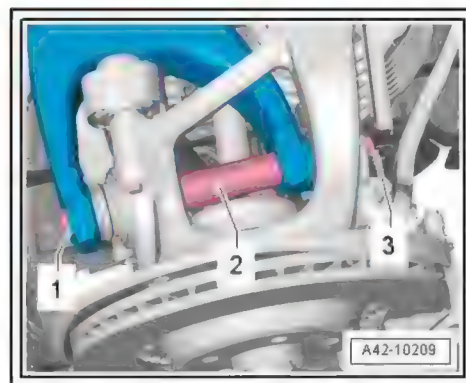
The bolted connection must not be tightened by the nut -3-.

- Tighten bolt -1-.
- Install coil spring ⇒ [page 230](#) or air spring ⇒ [page 238](#) .
- Install brake disc and brake caliper ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Removing and installing brake disc .
- Install track rod ⇒ [page 212](#) .
- Install upper transverse link ⇒ [page 205](#) .
- Install lower transverse link ⇒ [page 207](#) .
- Install speed sensor (rear) ⇒ Brake system; Rep. gr. 45 ; Sensors; Removing and installing rear speed sensors -G44- / -G46- .
- Fit rear wheel ⇒ [page 329](#) .
- Tighten bolt securing drive shaft to wheel hub ⇒ [page 269](#) .
- Check and adjust wheel alignment as required, see chart ⇒ [page 344](#) .

Wheel alignment must always be checked and adjusted if necessary using VW/Audi-approved equipment.

#### Tightening torques

- ◆ ⇒ ["6.1.2 Exploded view - wheel bearing housing, four-wheel drive vehicles and e-tron vehicles", page 242](#)





## 6.3 Removing and installing wheel bearing unit

⇒ ["6.3.1 Removing and installing wheel bearing unit, front-wheel drive vehicles not including e-tron vehicles", page 250](#)

⇒ ["6.3.2 Removing and installing wheel bearing unit, four-wheel drive and e-tron vehicles", page 253](#)

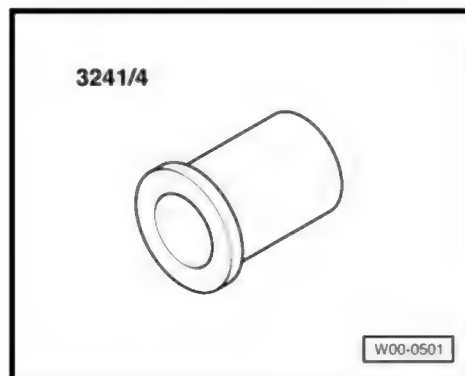
### 6.3.1 Removing and installing wheel bearing unit, front-wheel drive vehicles not including e-tron vehicles

Special tools and workshop equipment required

◆ Hub grease cap puller - VW 637/2-



◆ Fitting sleeve - 3241/4-



◆ Torque wrench - V.A.G 1332-



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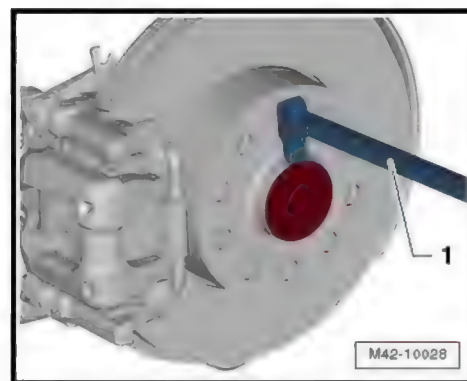
◆ Torque wrench - V.A.G 1410-



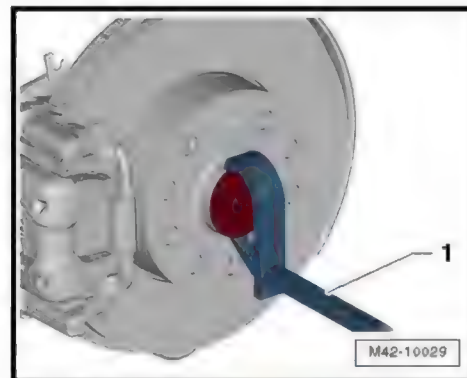
◆ Lubricating paste

Removing

- Remove rear wheel ➔ [page 329](#) .
- Loosen grease cap by tapping lightly on hub grease cap puller - VW 637/2- -1-.



- Lever off grease cap with hub grease cap puller - VW 637/2-1-.
- Loosen bolt for wheel bearing unit.



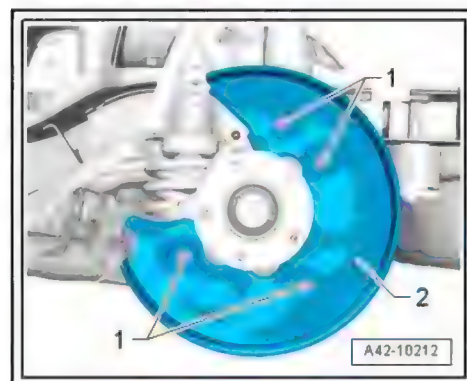
- Unbolt brake caliper and brake disc from wheel bearing housing, guide past suspension and secure to body ➔ Brake system; Rep. gr. 46 ; Rear brakes; Removing and installing brake disc .

! NOTICE

After detaching brake caliper, secure caliper to body so that weight of caliper does not stretch or damage brake hose or brake pipe.

Do not press brake pedal after brake caliper has been removed.

- Remove bolts -1- from splash plate -2-.







- Reach behind additional seal -arrow-. Use additional seal -arrow- to pull off wheel bearing unit (not shown in illustration).



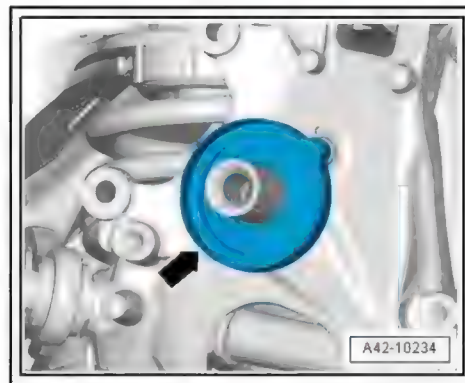
#### NOTICE

Do NOT detach the wheel bearing unit by pulling on the outer bearing race (wheel hub).



#### Note

*If the wheel bearing unit can be pulled off the wheel bearing housing by hand, the wheel bearing unit is OK and does not have to be renewed.*



#### NOTICE

Avoid dirtying or damaging the seal when laying down or storing the wheel bearing.

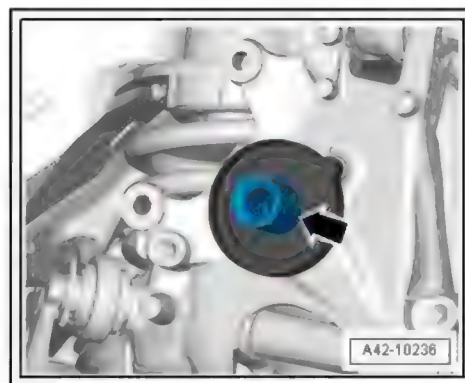
- The wheel bearing -1- must always be pointing upwards.
- Always put down the wheel bearing unit with the wheel hub -2- facing downwards.

#### Installing

Installation is carried out in reverse sequence. Note the following:



- Clean additional seal.
- Fit additional seal and lubricate stub axle -arrow- lightly with lubricating paste .
- Install brake caliper and brake disc ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Removing and installing brake disc .







- Drive in new grease cap using fitting sleeve - 3241/4- -1-.



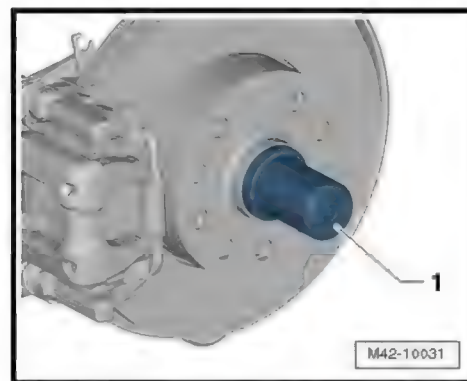
Note

- ◆ Always renew used grease caps.
- ◆ A used grease cap will allow moisture to enter the bearing. For this reason it is important to use the tool shown in the illustration.

- Tighten bolt for wheel bearing unit.
- Fit rear wheel ⇒ [page 329](#) .

Tightening torques

- ◆ ⇒ "6.1.1 Exploded view - wheel bearing, front-wheel drive vehicles not including e-tron vehicles", [page 240](#)



### 6.3.2 Removing and installing wheel bearing unit, four-wheel drive and e-tron vehicles

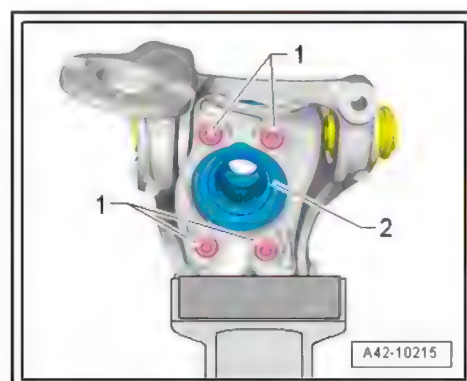
Removing

- Remove wheel bearing housing ⇒ [page 246](#) .
- Clamp wheel bearing housing in a vice with protective aluminium jaws.
- Remove bolts -1- and detach wheel bearing unit -2-.

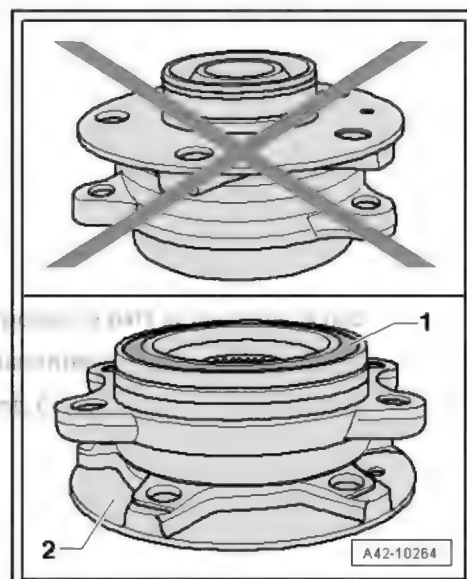


NOTICE

Avoid dirtying or damaging the seal when laying down or storing the wheel bearing.



- The wheel bearing -1- must always be pointing upwards.
- Always put down the wheel bearing unit with the wheel hub -2- facing downwards.







- Do not touch the inside of the wheel bearing when you pick it up.
- Always take hold of the outside of the wheel bearing.

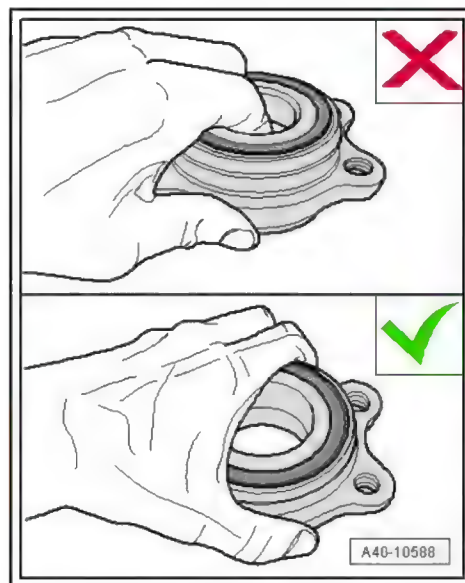
The same procedure applies to the wheel bearing without wheel hub.

#### Installing

Installation is carried out in reverse sequence.

#### Tightening torques

- ◆ ⇒ ["6.1.2 Exploded view - wheel bearing housing, four-wheel drive vehicles and e-tron vehicles", page 242](#)
- Check and adjust wheel alignment as required, see chart [⇒ page 344](#) .



## 6.4 Servicing wheel bearing unit

Special tools and workshop equipment required

- ◆ Thrust plate - VW 401-



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- ◆ Thrust plate - VW 402-







◆ Press tool - VW 412-



◆ Assembly tool - T10230-



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◆ Workshop press - VAS 6654- , not illustrated

◆ Puller set for inner bearing races - VAS 701 003- (not illustrated)

Procedure

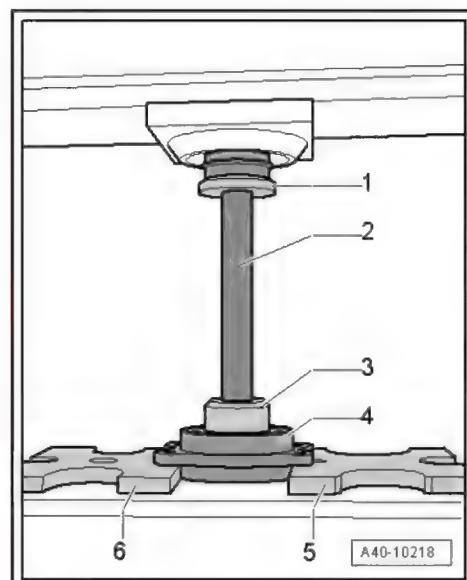
- Wheel bearing unit removed ➔ [page 250](#)

Pressing wheel hub out of wheel bearing

- Set up special tools as shown in illustration.

- 1 - Press tool - VW 412-
- 2 - Sleeve -T10230/3-
- 3 - Thrust piece -T10230/8-
- 4 - Wheel bearing unit
- 5 - Thrust plate - VW 402-
- 6 - Thrust plate - VW 401-

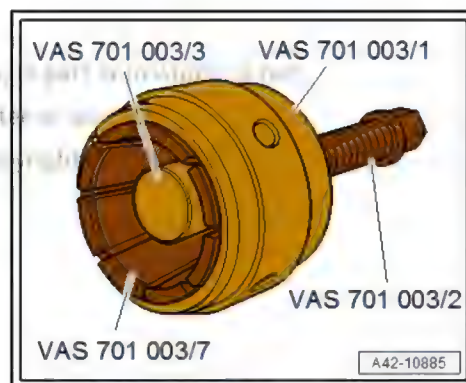
- Press wheel hub out of wheel bearing.





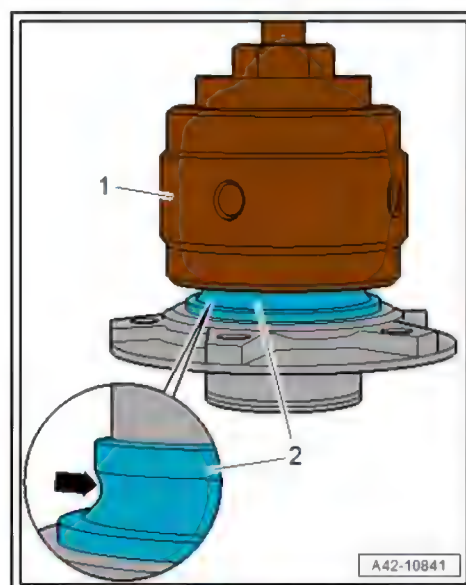
### Pressing inner bearing race off wheel hub

- Prepare puller from puller set for inner bearing races - VAS 701 003- as follows:
- Screw clamping sleeve - VAS 701 003/1- onto clamp tensioner - VAS 701 003/7-.
- Screw threaded spindle - VAS 701 003/2- into clamping sleeve and fit thrust piece - VAS 701 003/3-.



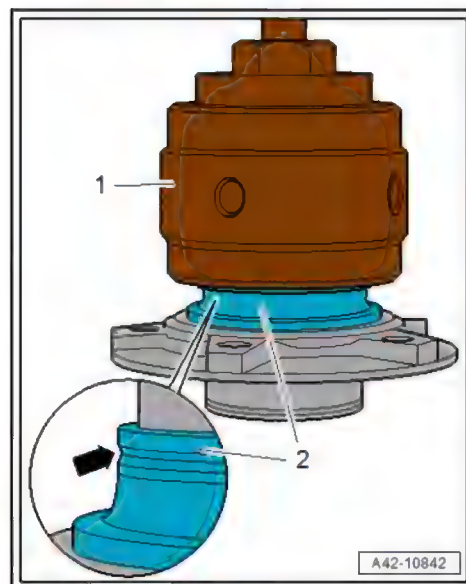
### Inner bearing race version 1:

- Remove ball cage from inner bearing race -2-.
- Apply puller -1- to ball raceways -arrow- of inner race, as shown.



### Inner bearing race version 2:

- Apply puller -1- to groove -arrow- of inner race -2-.

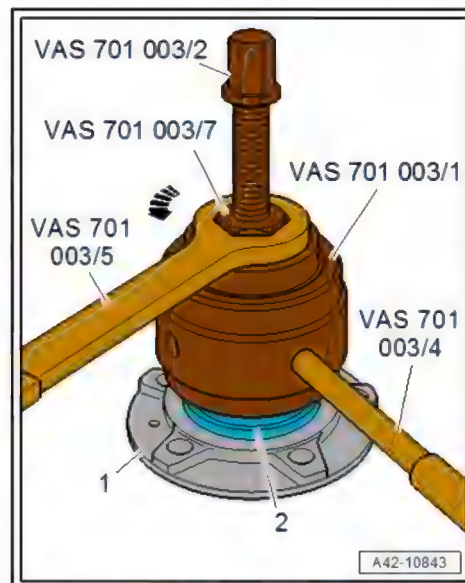






#### All versions (continued):

- Clamp puller in place on inner race -2-; to do so, use spanner - VAS 701 003/7- to turn clamp tensioner - VAS 701 003/5- in direction of -arrow- and counterhold clamping sleeve - VAS 701 003/1- with tensioner handle - VAS 701 003/4- .
- Use threaded spindle - VAS 701 003/2- to detach inner bearing race from wheel hub -1-.

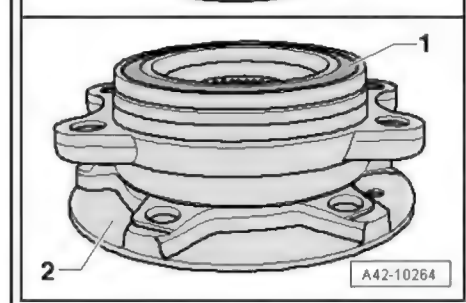
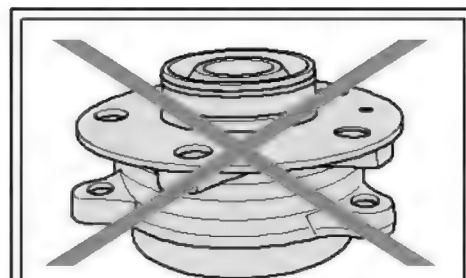


#### Pressing wheel hub into wheel bearing

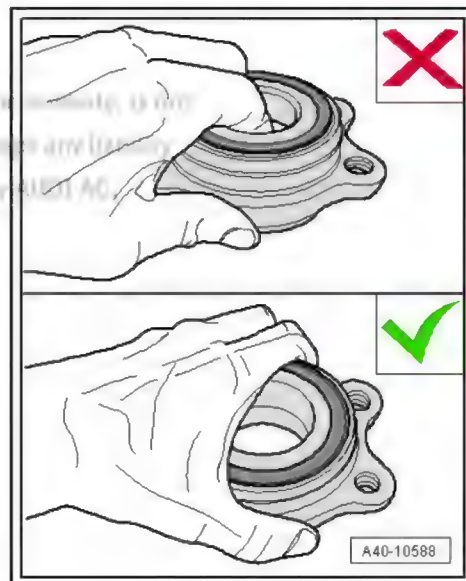


Avoid dirtying or damaging the seal when laying down or storing the wheel bearing.

- The wheel bearing -1- must always be pointing upwards.
- Always put down the wheel bearing unit with the wheel hub -2- facing downwards.



- Do not touch the inside of the wheel bearing when you pick it up.
- Always take hold of the outside of the wheel bearing.





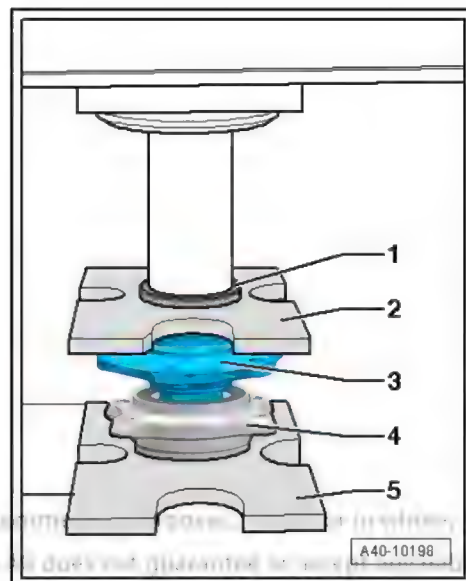
- Set up special tools as shown in illustration.
- 1 - Press tool - VW 412-
- 2 - Thrust plate - VW 402-
- 3 - Wheel hub
- 4 - Wheel bearing
- 5 - Thrust plate - VW 401-
- The machined surface of the wheel bearing outer race faces downwards.

**NOTICE**

Take precautions not to damage or dirty the wheel bearing.

- ◆ Make sure no dirt gets between thrust plate - VW 401- and wheel bearing when pressing in the hub or when the parts are placed on a workbench, etc.

- Press wheel hub into wheel bearing.
- Install wheel bearing unit ⇒ [page 113](#) .



## 6.5 Renewing bonded rubber bushes for wheel bearing housing

⇒ [“6.5.1 Renewing bonded rubber bushes for wheel bearing housing, front-wheel drive vehicles not including e-tron vehicles”, page 258](#)

⇒ [“6.5.2 Renewing bonded rubber bushes for wheel bearing housing, four-wheel drive and e-tron vehicles”, page 262](#)

### 6.5.1 Renewing bonded rubber bushes for wheel bearing housing, front-wheel drive vehicles not including e-tron vehicles

Special tools and workshop equipment required

- ◆ Thrust plate - VW 401-







◆ Thrust plate - VW 402-



◆ Press tool - VW 408 A-



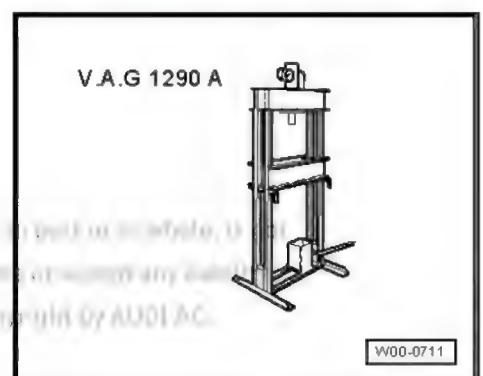
◆ Press tool - VW 411-



◆ Workshop press - V.A.G 1290 A-

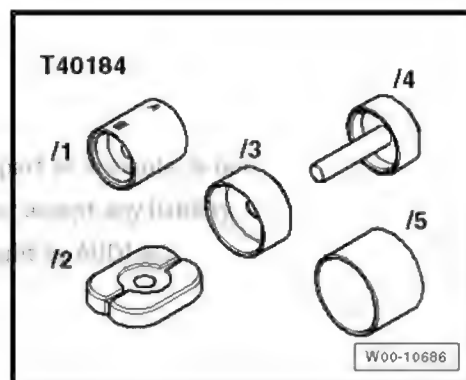


Handbook for the use of the V.A.G 1290 A workshop press. The V.A.G 1290 A workshop press is a hydraulic press with a maximum pressure of 100 bar. It is used for pressing and pulling work. The V.A.G 1290 A workshop press is a hydraulic press with a maximum pressure of 100 bar. It is used for pressing and pulling work. The V.A.G 1290 A workshop press is a hydraulic press with a maximum pressure of 100 bar. It is used for pressing and pulling work.



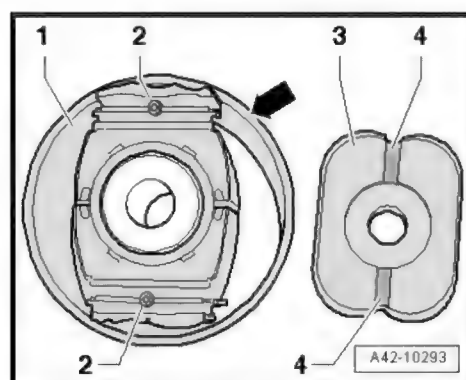


## ◆ Assembly tool - T40184-



## Removing

- Remove wheel bearing housing ➔ [page 243](#) .
- To press out front bonded rubber bush, thrust plate - T40184/2- -3- must be positioned on front bonded rubber bush so that studs -2- engage in grooves -4-.



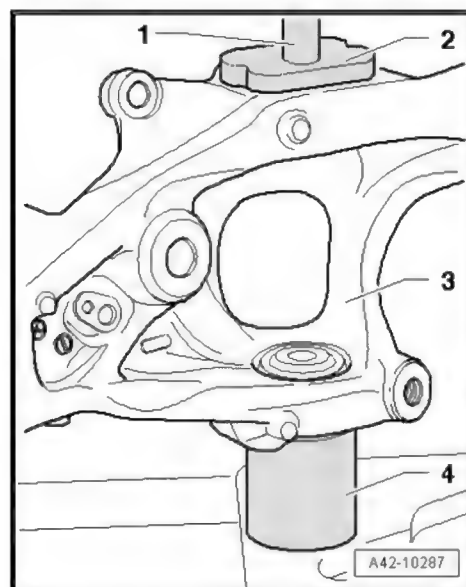
- Apply tools to front bonded rubber bush and wheel bearing housing as shown in illustration.



## Note

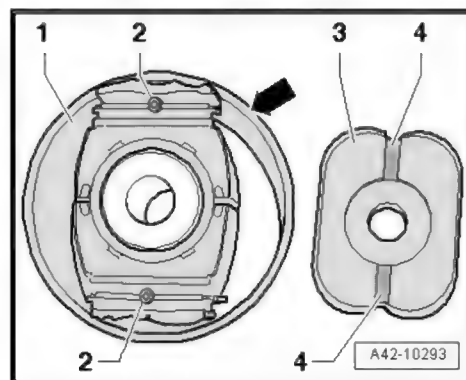
*When positioning the wheel bearing housing on the sleeve - T40184/1- , make sure the rubber sleeve of the rear bonded rubber bush is not damaged / moved.*

- 1 - Press tool - VW 411-
- 2 - Thrust plate - T40184/2- .
- 3 - Wheel bearing housing
- 4 - Sleeve - T40184/1- Side with groove must face wheel bearing housing. If bonded rubber bush has a "positioning lug", this fits into groove on sleeve - T40184/1- .
- Press out front bonded rubber bush.



## Installing

- Insert front bonded rubber bush into sleeve - T40184/3- . Thin collar -arrow- must face upwards.
- To press in front bonded rubber bush, position thrust plate - T40184/2- -3- on front bonded rubber bush so that studs -2- engage in grooves -4-.







- Press in front bonded rubber bush until it makes contact with thrust plates -1- and -6-.

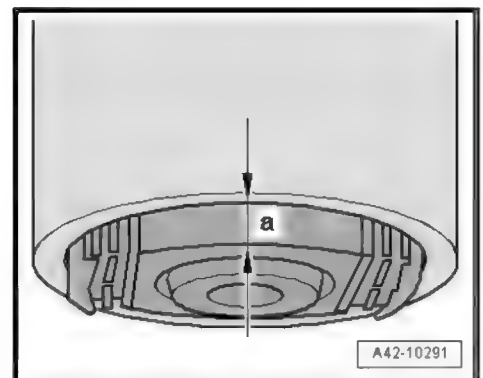
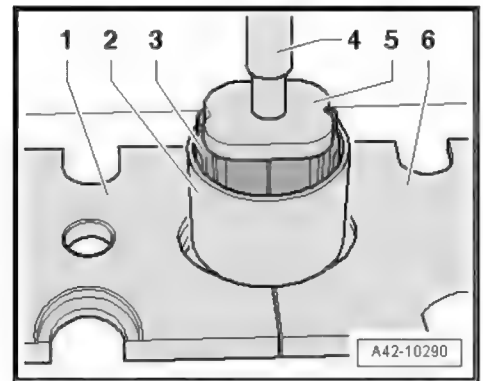
- 1 - Thrust plate - VW 401- . Position as shown in illustration.
- 2 - Sleeve - T40184/3-
- 3 - Bonded rubber bush (front)
- 4 - Press tool - VW 408 A-
- 5 - Thrust plate - T40184/2-
- 6 - Thrust plate - VW 402- . Position as shown in illustration.

- Then pull thrust plates -1- and -6- apart slightly.

- Press front bonded rubber bush approx. 2 mm out of sleeve - T40184/3- .

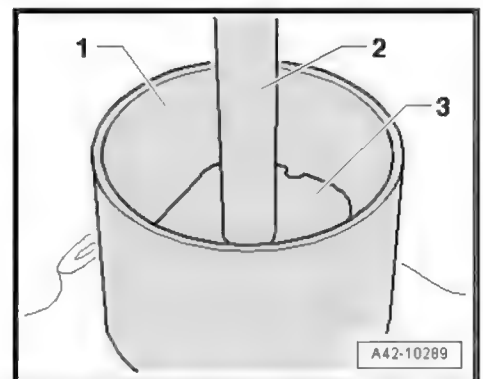
a = 2 mm

- Detach press tool - VW 408 A- and insert press tool - VW 411- .
- Position wheel bearing housing on workshop press - V.A.G 1290 A- .



- Position front bonded rubber bush (not visible in illustration), thrust plate -3- and sleeve -1- on wheel bearing housing.

- 1 - Sleeve - T40184/3-
- 2 - Press tool - VW 411-
- 3 - Thrust plate - T40184/2- . Note installation position on front bonded rubber bush.



- Apply tools to front bonded rubber bush and wheel bearing housing -3- as shown in illustration.

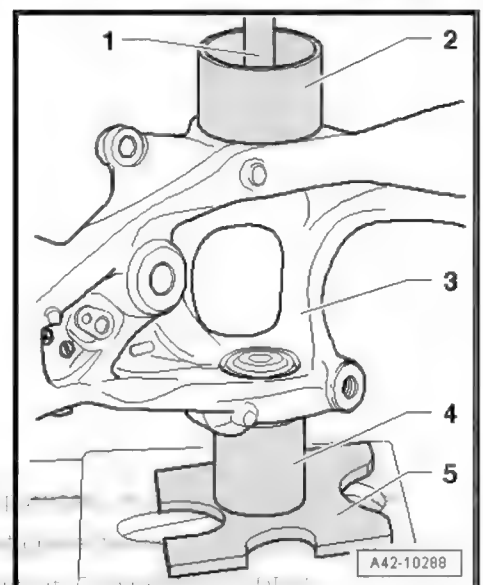


#### Note

*When positioning the wheel bearing housing on the sleeve - T40184/1- , make sure the rubber sleeve of the rear bonded rubber bush is not damaged / moved.*

- Slowly press in front bonded rubber bush (not visible in illustration) until sleeve -2- can be lifted off.

- 1 - Press tool - VW 411-
- 2 - Sleeve - T40184/3-
- 3 - Wheel bearing housing
- 4 - Sleeve - T40184/1- Side with groove must face wheel bearing housing. If bonded rubber bush has a "positioning lug", this fits into groove on sleeve - T40184/1-
- 5 - Thrust plate - VW 402-





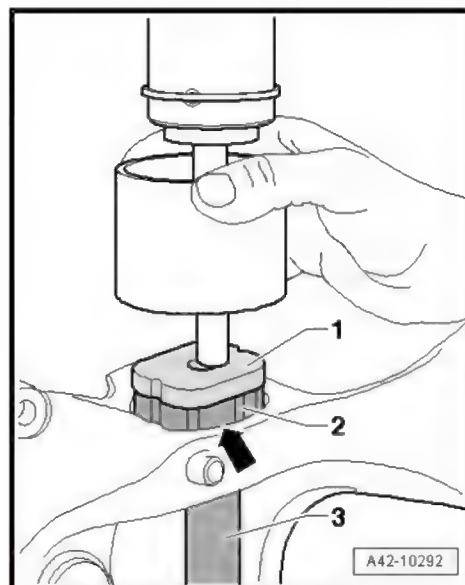
- Slowly press in front bonded rubber bush -2- until it is flush with edge of wheel bearing housing -arrow-.



Note

Disregard -item 3-.

- Install wheel bearing housing ➔ [page 243](#) .



## 6.5.2 Renewing bonded rubber bushes for wheel bearing housing, four-wheel drive and e-tron vehicles

Special tools and workshop equipment required

- ◆ Thrust plate - VW 401-



- ◆ Thrust plate - VW 402-



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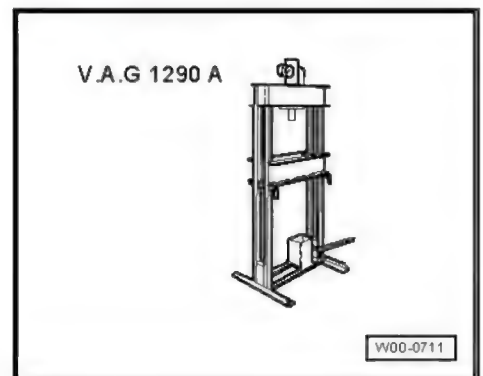
◆ Press tool - VW 408 A-



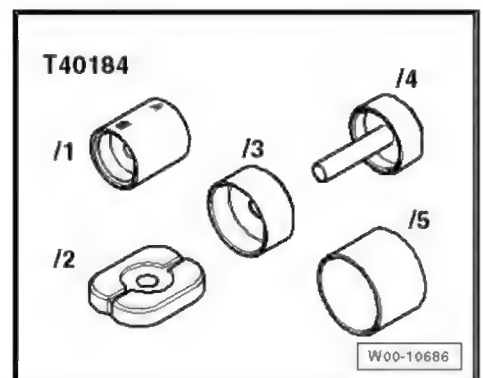
◆ Press tool - VW 411-



◆ Workshop press - V.A.G 1290 A-



◆ Assembly tool - T40184-





## Removing

- Remove wheel bearing housing ➔ [page 243](#) .
- To press out front bonded rubber bush, thrust plate - T40184/2- -3- must be positioned on front bonded rubber bush so that studs -2- engage in grooves -4-.



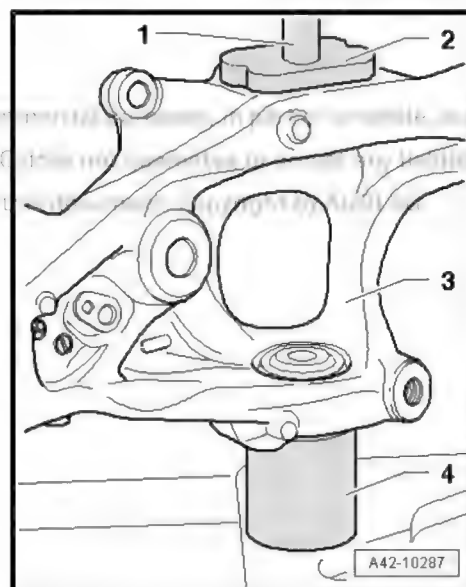
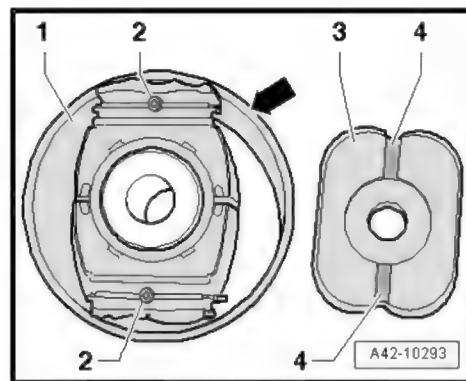
- Apply tools to front bonded rubber bush and wheel bearing housing as shown in illustration.



### Note

*When positioning the wheel bearing housing on the sleeve - T40184/1- , make sure the rubber sleeve of the rear bonded rubber bush is not damaged / moved.*

- 1 - Press tool - VW 411-
- 2 - Thrust plate - T40184/2-
- 3 - Wheel bearing housing
- 4 - Sleeve - T40184/1- Side with groove must face wheel bearing housing. If bonded rubber bush has a "positioning lug", this fits into groove on sleeve - T40184/1- .
- Press out front bonded rubber bush.

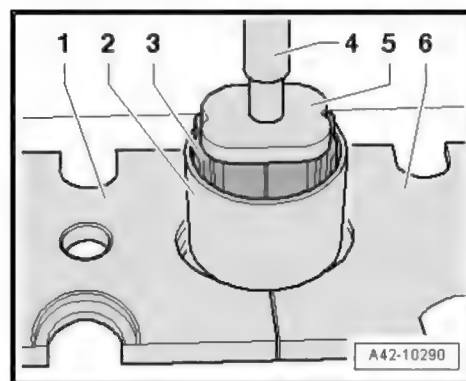
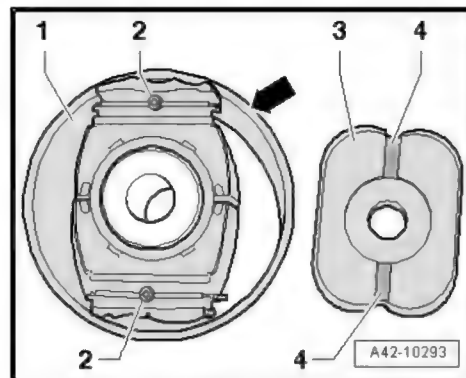


## Installing

- Insert front bonded rubber bush into sleeve - T40184/3- . Thin collar -arrow- must face upwards.
- To press in front bonded rubber bush, position thrust plate - T40184/2- -3- on front bonded rubber bush so that studs -2- engage in grooves -4-.

- Press in front bonded rubber bush until it makes contact with thrust plates -1- and -6-.

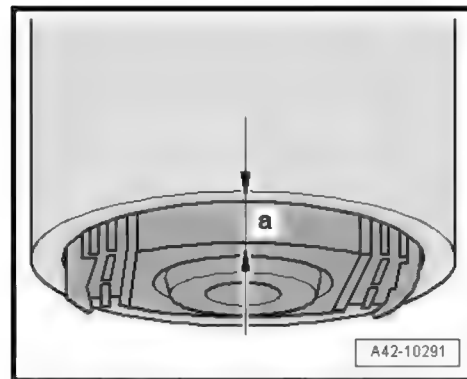
- 1 - Thrust plate - VW 401- . Position as shown in illustration.
- 2 - Sleeve - T40184/3-
- 3 - Bonded rubber bush (front)
- 4 - Press tool - VW 408 A-
- 5 - Thrust plate - T40184/2-
- 6 - Thrust plate - VW 402- . Position as shown in illustration.
- Then pull thrust plates -1- and -6- apart slightly.



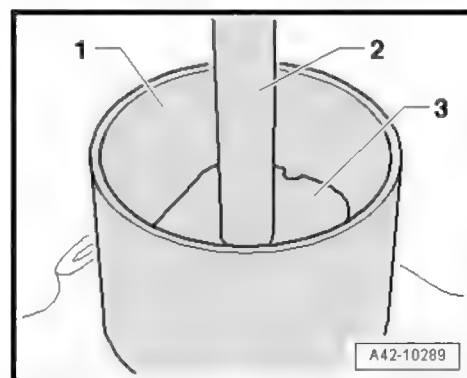




- Press front bonded rubber bush approx. 2 mm out of sleeve - T40184/3- .  
a = 2 mm
- Detach press tool - VW 408 A- and insert press tool - VW 411- .
- Position wheel bearing housing on workshop press - V.A.G 1290 A- .



- Position front bonded rubber bush (not visible in illustration), thrust plate -3- and sleeve -1- on wheel bearing housing.
- 1 - Sleeve - T40184/3-
  - 2 - Press tool - VW 411-
  - 3 - Thrust plate - T40184/2- . Note installation position on front bonded rubber bush.



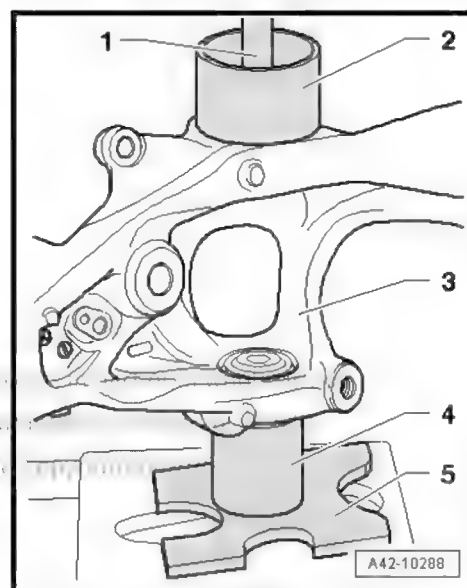
- Apply tools to front bonded rubber bush and wheel bearing housing -3- as shown in illustration.



#### Note

*When positioning the wheel bearing housing on the sleeve - T40184/1- , make sure the rubber sleeve of the rear bonded rubber bush is not damaged / moved.*

- Slowly press in front bonded rubber bush (not visible in illustration) until sleeve -2- can be lifted off.
- 1 - Press tool - VW 411-
  - 2 - Sleeve - T40184/3-
  - 3 - Wheel bearing housing
  - 4 - Sleeve - T40184/1- Side with groove must face wheel bearing housing. If bonded rubber bush has a "positioning lug", this fits into groove on sleeve - T40184/1- .
  - 5 - Thrust plate - VW 402-





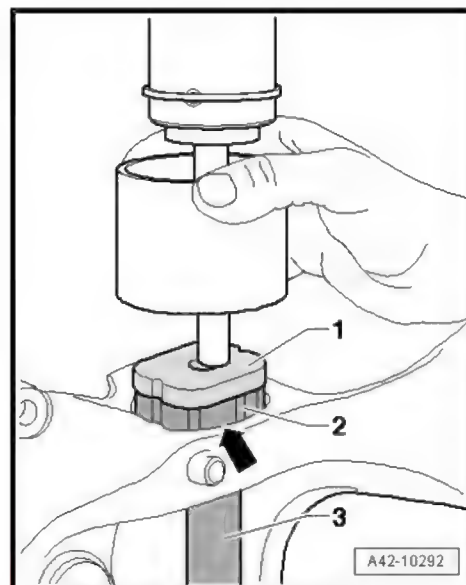
- Slowly press in front bonded rubber bush -2- with thrust plate - T40184/2- -item 1- until it is flush with edge of wheel bearing housing -arrow-.



#### Note

Disregard -item 3-.

- Install wheel bearing housing ➔ [page 243](#) .



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## 7 Drive shaft

⇒ "7.1 Exploded view - drive shaft", page 267

⇒ "7.2 Removing and installing drive shaft", page 269

⇒ "7.3 Loosening and tightening bolt securing drive shaft", page 269

⇒ "7.4 Renewing constant velocity joint", page 271

⇒ "7.5 Checking outer constant velocity joint", page 279

⇒ "7.6 Checking inner constant velocity joint", page 279

### 7.1 Exploded view - drive shaft

#### 1 - Cover

- ☐ Drive cover off carefully with drift; renew if damaged
- ☐ Sealing surfaces between cover and inner CV joint must be free from grease on assembly
- ☐ Before attaching to constant velocity joint, apply sealant to sealing surface ⇒ [page 277](#)

#### 2 - Circlip

- ☐ Use normal commercial circlip pliers when removing and installing
- ☐ Always renew if removed

#### 3 - Inner constant velocity joint

- ☐ Renew only as complete unit
- ☐ Checking ⇒ [page 279](#)
- ☐ Grease quantity and type ⇒ [page 268](#)
- ☐ Adhesive surfaces must be free of oil and grease
- ☐ Grease splines on drive shaft lightly with grease used in joint when fitting joint onto drive shaft

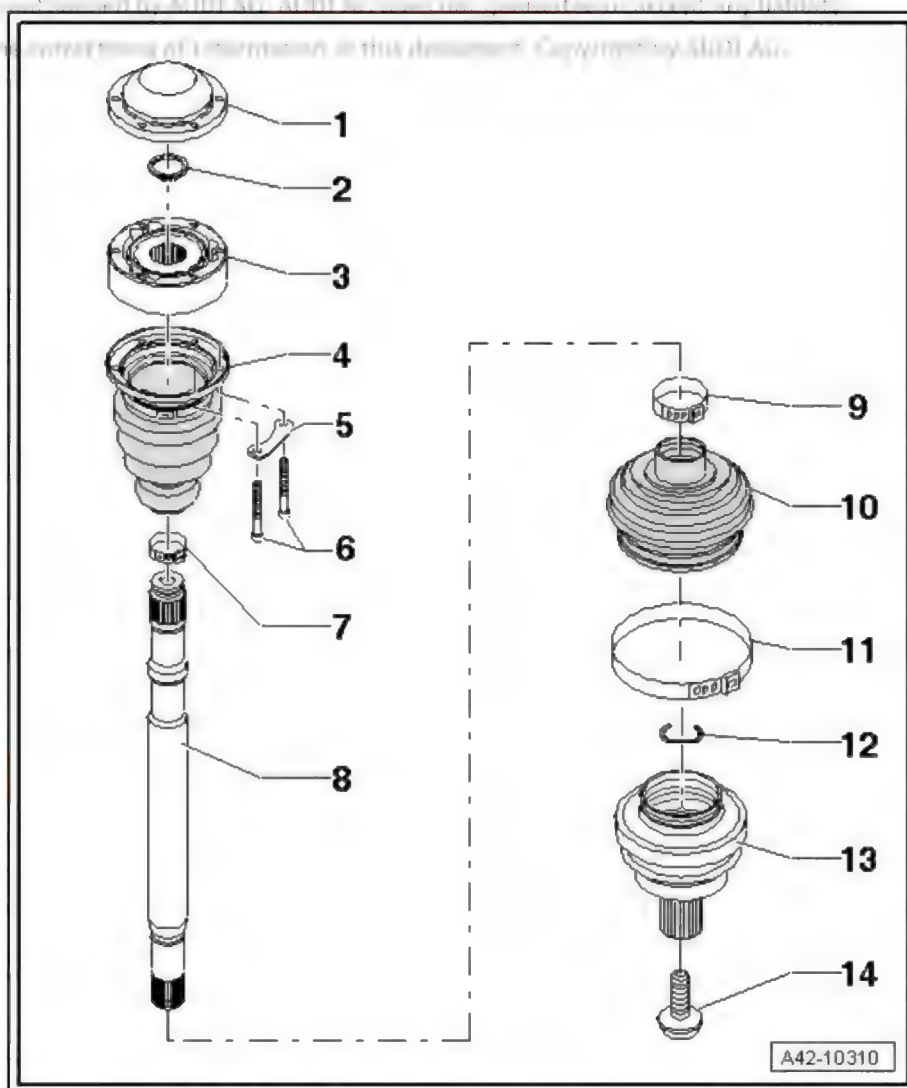
#### 4 - Boot with cap for inner constant velocity joint

- ☐ Without vent hole
- ☐ Drive cap off carefully with drift; renew if damaged
- ☐ Check inner constant velocity joint if boot is damaged ⇒ [page 279](#)
- ☐ Sealing surfaces between cap and inner constant velocity joint must be free from grease on assembly

#### 5 - Lock plate

#### 6 - Bolt

- ☐ M10
- ☐ 70 Nm







- ☐ Always renew if removed

#### 7 - Hose clip

- ☐ Always renew if removed
- ☐ Tightening ⇒ [page 279](#)

#### 8 - Drive shaft

- ☐ Removing and installing ⇒ [page 269](#)

#### 9 - Hose clip

- ☐ Always renew if removed
- ☐ Tightening ⇒ [page 273](#)

#### 10 - Boot for outer constant velocity joint

- ☐ Without vent hole
- ☐ Check for splits and chafing, renew if necessary
- ☐ Check outer constant velocity joint if boot is damaged ⇒ [page 279](#)
- ☐ Sealing surfaces between boot and outer metal cap must be free from grease on assembly
- ☐ Sealing surfaces between boot and drive shaft must be free from grease on assembly

#### 11 - Hose clip

- ☐ Always renew if removed
- ☐ Tightening ⇒ [page 273](#)

#### 12 - Circlip

- ☐ Renew
- ☐ For correct version refer to ⇒ Electronic parts catalogue
- ☐ Fit into annular groove on shaft before installing (no longer visible once joint is installed)
- ☐ Before fitting the constant velocity joint, align the circlip centrally with the opening facing upwards

#### 13 - Outer constant velocity joint

- ☐ Renew only as complete unit
- ☐ Checking ⇒ [page 279](#)
- ☐ Driving off ⇒ [page 271](#)
- ☐ Installing: drive onto shaft with plastic hammer until compressed circlip seats
- ☐ Circlip must fit in chamfer on joint when installing; guide with pliers if necessary
- ☐ Grease quantity and type ⇒ [page 268](#)
- ☐ Sealing surfaces between boot and outer CV joint must be free from grease on assembly
- ☐ Grease splines on drive shaft lightly with grease used in joint when fitting joint onto drive shaft

#### 14 - Bolt

- ☐ 200 Nm +180°
- ☐ Always renew if removed
- ☐ Observe instructions for loosening and tightening ⇒ [page 269](#)

#### Grease quantity and type

Regrease joint when renewing boot.

For required grease filling of joints, refer to ⇒ Electronic parts catalogue .



#### Note

*Note that different types of grease are required for outer and inner joints.*





	Grease quantity	of which in:	
Outer joint	Total quantity	Joint	Boot
[mm]	[g]	[g]	[g]
94	80	40	40
Inner joint			
107	120	Put in grease through ball bearing races	

## 7.2 Removing and installing drive shaft

### Removing

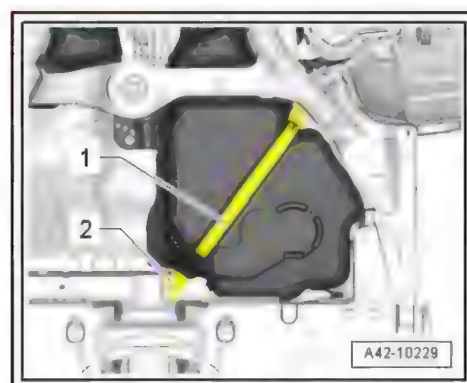
- Slacken bolt securing drive shaft to wheel hub ➔ [page 269](#) .
- Remove rear wheel ➔ [page 329](#) .

### Vehicles with coil springs:

- Remove coil spring ➔ [page 230](#) .

### Vehicles with air suspension:

- Bleed air springs of rear axle ➔ [page 284](#) .
- Secure tensioning strap -1- by fitting bolt -2- hand-tight.
- Remove rear final drive ➔ Final drive; Rep. gr. 39 ; Final drive; Removing and installing final drive .

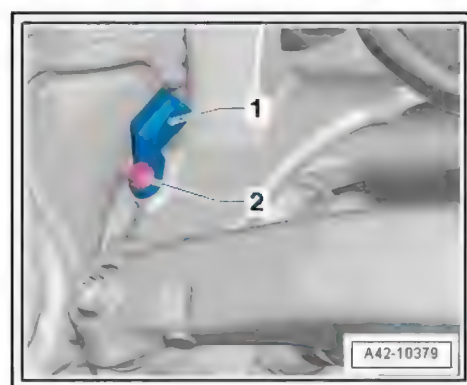


- Remove bolt -2- and take off rear speed sensor -1-.
- Take out drive shaft from the inside.

### Installing

Installation is carried out in reverse sequence. Note the following:

- Install rear final drive ➔ Final drive; Rep. gr. 39 ; Final drive; Removing and installing final drive .
- Install speed sensor (rear) ➔ Brake system; Rep. gr. 45 ; Sensors; Removing and installing rear speed sensors -G44- / -G46- .
- Fit rear wheel ➔ [page 329](#) .
- Charge air springs of rear axle ➔ [page 284](#) .
- Tighten bolt securing drive shaft to wheel hub ➔ [page 269](#) .



### Tightening torques

- ♦ ➔ ["7.1 Exploded view - drive shaft", page 267](#)

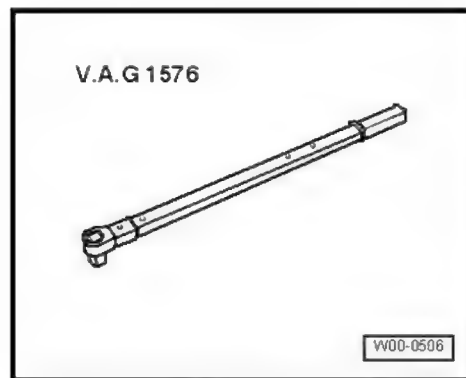
## 7.3 Loosening and tightening bolt securing drive shaft

Special tools and workshop equipment required



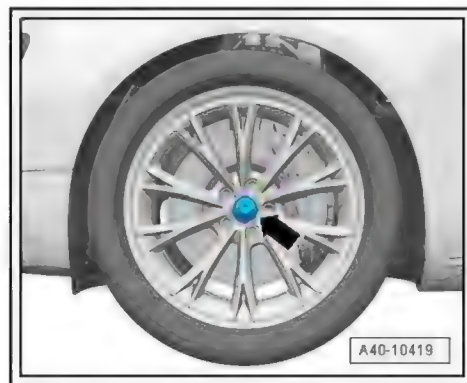


◆ Torque wrench - V.A.G 1576-



Loosening bolt securing drive shaft to wheel hub

- To avoid damage to wheel bearing, slacken off bolt no further than 90° with vehicle standing on its wheels.
- Remove rear wheel ➔ [page 329](#) .
- Raise vehicle so that wheels are off the ground.
- Have a second mechanic press brake pedal.
- Remove bolt -arrow-.



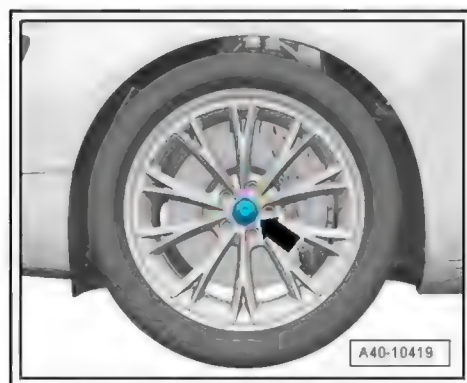
Tightening bolt securing drive shaft to wheel hub

- Renew bolt -arrow-.



Note

- ◆ *Before securing, clean the threads in the CV joint using a thread tap*
- ◆ *The wheels must not be in contact with the ground when initially tightening the drive shaft bolt; otherwise the wheel bearing can be damaged.*
- Have a second mechanic press brake pedal.
- Tighten bolt to 200 Nm.
- Lower vehicle onto its wheels.
- Turn bolt 180° further.



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## 7.4 Renewing constant velocity joint

⇒ ["7.4.1 Renewing outer constant velocity joint", page 271](#)

⇒ ["7.4.2 Renewing inner constant velocity joint", page 273](#)

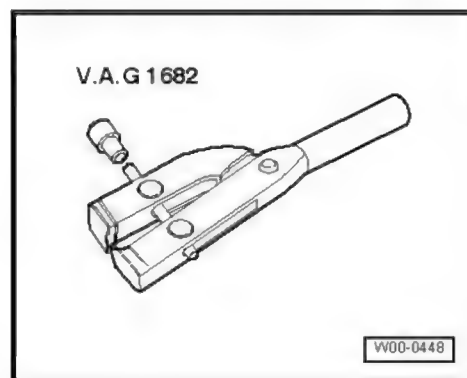
### 7.4.1 Renewing outer constant velocity joint

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



- ◆ Clamp tensioner - V.A.G 1682 A-



- ◆ Circlip pliers (commercially available)
- ◆ Sealant ⇒ Electronic parts catalogue

Removing outer constant velocity joint

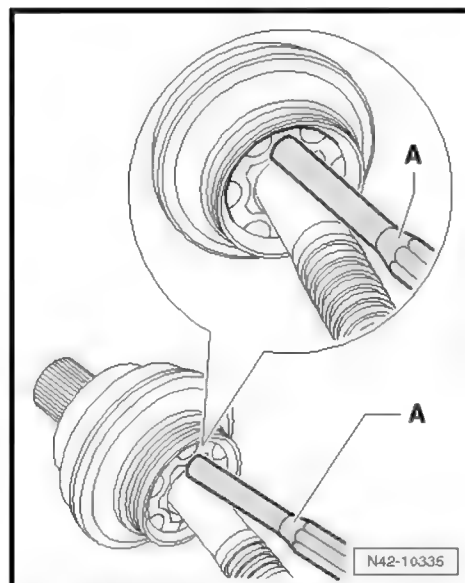
- Clamp drive shaft in vice using protective jaw covers.
- Open hose clips.
- Push back boot.

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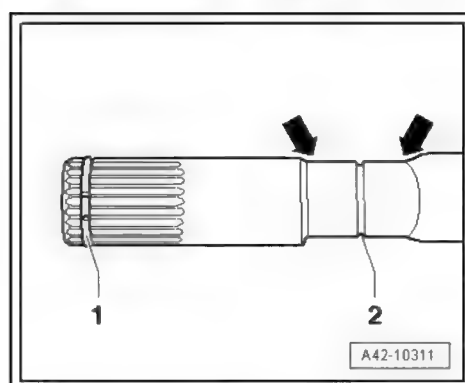




- Use hammer to tap copper or brass drift -A- against inner race of constant velocity joint.
- Detach joint and boot.

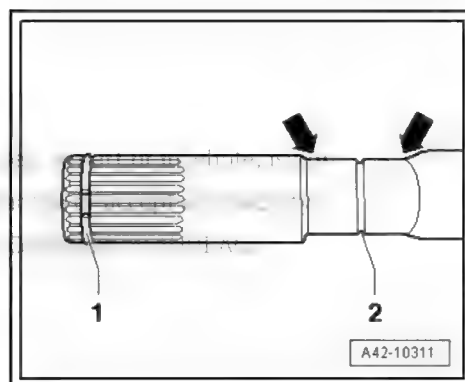


- Detach circlip -1-.

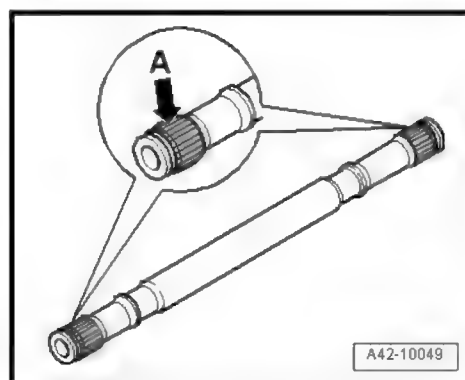


#### Installing outer constant velocity joint

- Push boot with new hose clip onto drive shaft.
- Boot and drive shaft must be free from grease.
- Position boot between -arrows- in groove -2-.
- 1 - Circlip (always renew)
- 2 - Positioning groove (push on boot until it engages in groove)
- Pack 80 g of drive shaft grease evenly into inside of joint body.



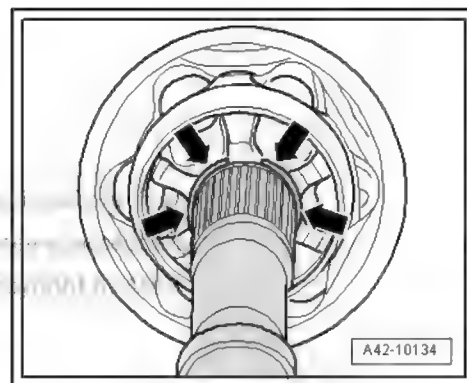
- Grease splines -A- on drive shaft lightly with grease used in joint before fitting joint body onto drive shaft.
- Fit circlip in groove on shaft.



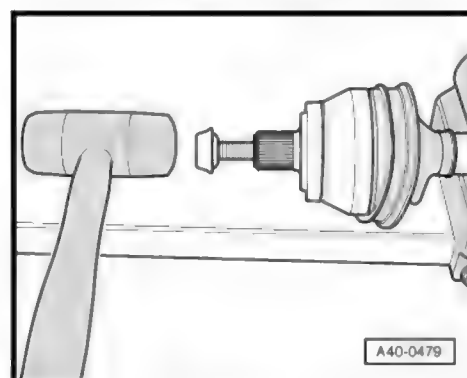




- Slide on constant velocity joint as far as circlip.
- Align circlip so that opening faces upwards -arrows-.

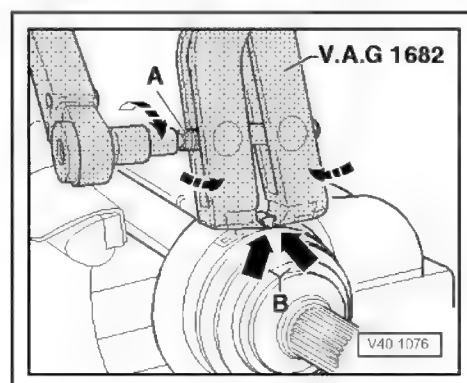


- Screw old bolt into CV joint as shown.
- Use plastic hammer to drive joint onto drive shaft until circlip engages.
- Fit boot on metal cap.
- Vent air from boot.
- Make sure boot is properly positioned on joint body.
- Boot must rest in groove and on contour of joint body.



#### Tightening hose clip on outer joint

- Apply clamp tensioner - V.A.G 1682- as shown. Ensure jaws of tool make contact with lugs -arrows B- on hose clip.
- Tighten clip by turning spindle with torque wrench -C- (take care to keep tool straight).
- ◆ Due to the hard material of the CV joint boot (as opposed to rubber), a stainless steel hose clip is required; this can only be tightened using clamp tensioner - V.A.G 1682- .
- ◆ Tightening torque: 20 Nm.
- ◆ Use torque wrench with 5...50 Nm adjustment range (e.g. - V.A.G 1331- ).
- ◆ Make sure thread of spindle on tool -A- turns freely. Lubricate with MoS<sub>2</sub> grease if necessary.
- ◆ If the thread is stiff (e.g. due to dirt), the required clamping force will not be attained at the hose clip when the specified tightening torque is applied.



## 7.4.2 Renewing inner constant velocity joint

Special tools and workshop equipment required



◆ Thrust plate - VW 401-



◆ Thrust plate - VW 402-



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◆ Press tool - VW 409-

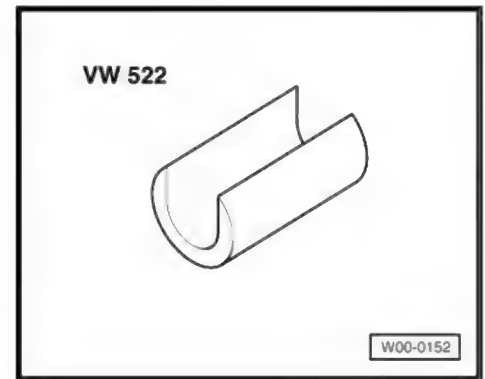


◆ Press tool - VW 412-

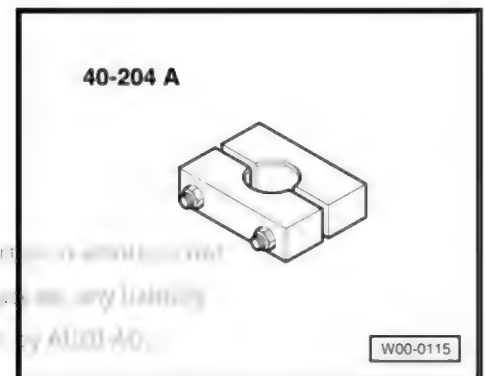




◆ Support sleeve - VW 522-



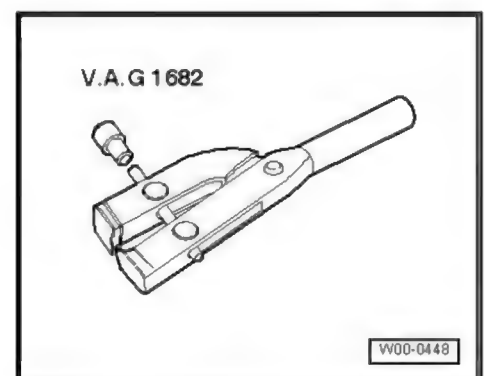
◆ Clamp - 40 - 204 A-



◆ Torque wrench - V.A.G 1331-



◆ Clamp tensioner - V.A.G 1682 A-

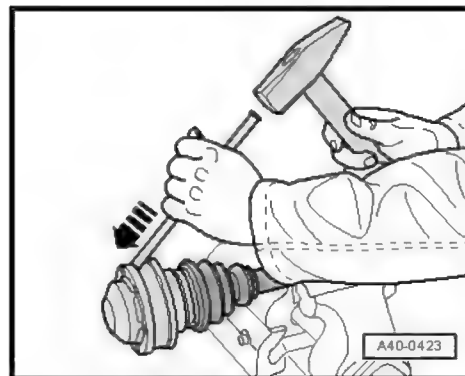


◆ Circlip pliers (commercially available)

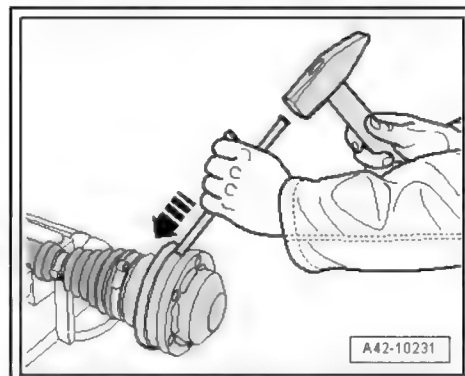


### Removing inner constant velocity joint

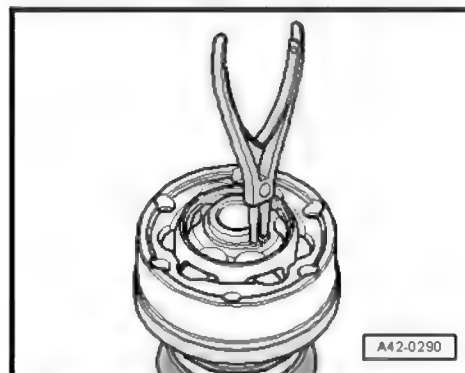
- Clamp drive shaft in vice using protective jaw covers.
- Drive off cover with a copper or brass drift.



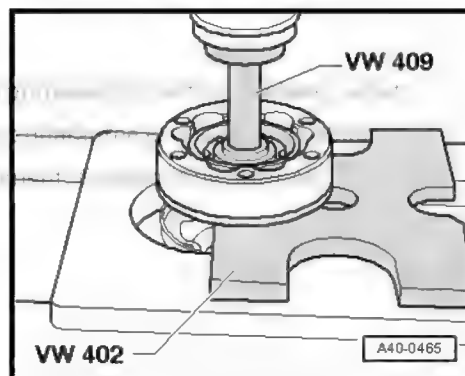
- Drive off cap with a copper or brass drift.
- Unfasten and detach only the small hose clip.



- Remove circlip.



- Press inner constant velocity joint off drive shaft using special tools shown in illustration.
- Pull boot off drive shaft.

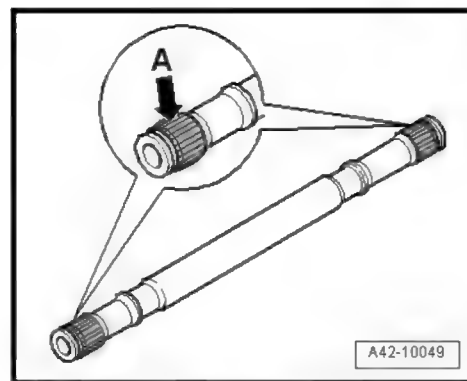






### Installing inner constant velocity joint

- Push boot with small hose clip onto drive shaft.
- Grease splines -A- on drive shaft lightly with grease used in joint before fitting joint body onto drive shaft.

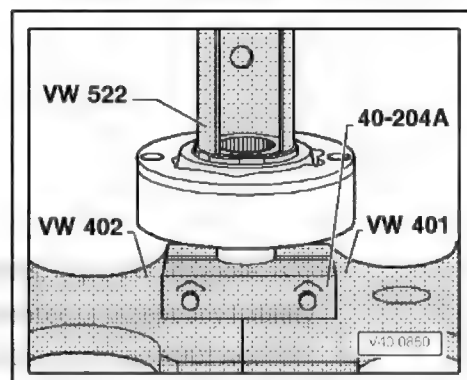


- Press on joint as far as stop.
- Chamfer on internal diameter of ball hub (splines) must face contact collar of drive shaft.
- Tensioner - 40-204 A- and clamping surface on drive shaft must be free of grease.

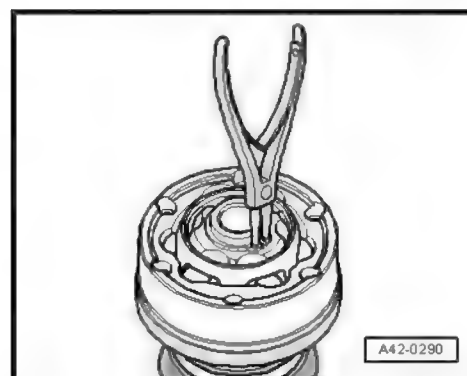


#### Note

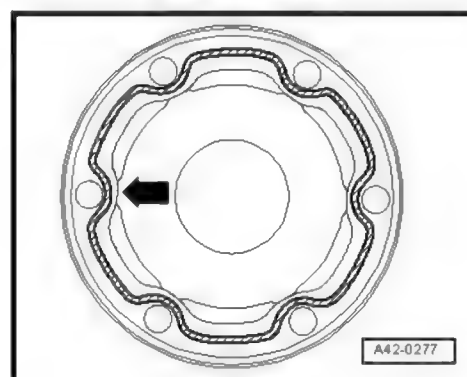
- ◆ Use the special tools shown in the illustration.
- ◆ Always renew circlip.



- Fit circlip.
- Check that circlip is properly seated.
- Before fitting boot, pack half the drive shaft grease provided into joint from boot side of joint.
- Degrease contact surface for cover.



- Apply sealant (hatched area) to clean surface on inside of cap on CV joint boot.
- Apply a continuous sealant bead of  $\varnothing$  2 - 3 mm.
- Route sealant bead around inside of holes -arrow-.
- Use sealant as listed in ➔ Electronic parts catalogue .
- Boot and contact surface of cap must be free of grease.





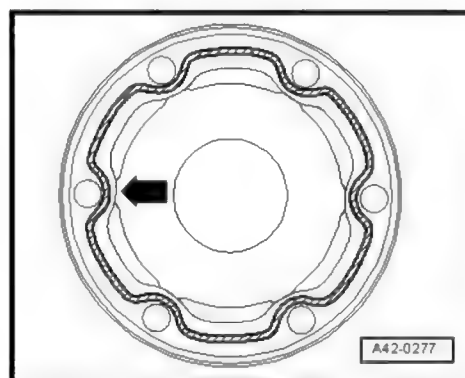
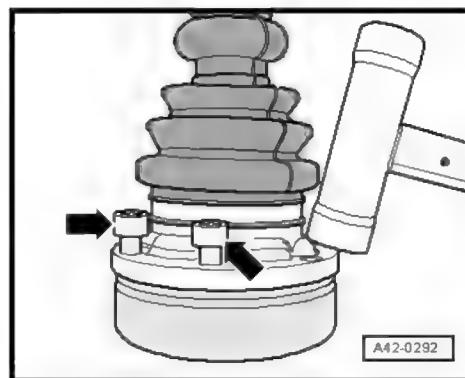
- Using bolts -arrows-, align new cover in relation to bolt holes.



#### Note

*The alignment must be very accurate, because no further alignment is possible once the part has been hammered on.*

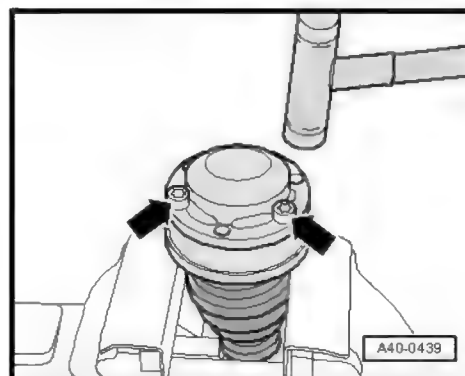
- Drive on cover using a plastic hammer.
- Remove surplus sealant immediately as it is pressed out.
- Pack remainder of drive shaft grease into constant velocity joint through ball races.
- Degrease contact surface for cover and for constant velocity joint.
- Apply sealant -hatched area- to clean inner surface of cover.
- Apply a continuous sealant bead of  $\varnothing$  2 - 3 mm.
- Route sealant bead around inside of holes -arrow-.
- Use sealant as listed in ➔ Electronic parts catalogue .



- Using bolts -arrows-, align new cover in relation to bolt holes.

*The alignment must be very accurate, because no further alignment is possible once the part has been hammered on.*

- Drive on cover using a plastic hammer.
- Remove surplus sealant immediately as it is pressed out.



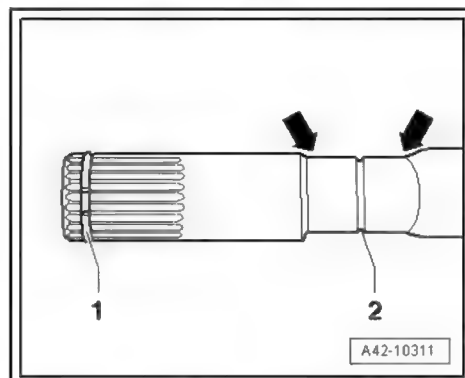
Boot and drive shaft must be free from grease.

- Position boot between -arrows- in groove -2-.
- 1 - Disregard
  - 2 - Positioning groove (push on boot until it engages in groove)



#### Note

*The inner joint is not shown in the illustration.*

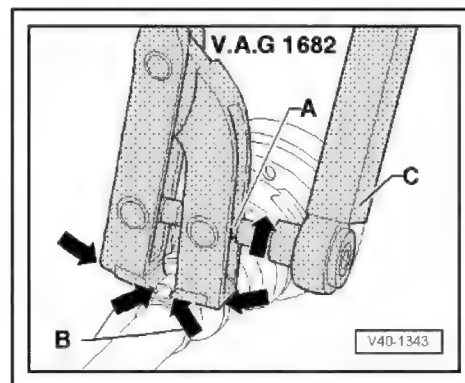






#### Fitting and tightening hose clips on inner joint

- Apply clamp tensioner - V.A.G 1682- as shown. Ensure jaws of tool make contact with lugs -arrows B- on hose clip.
- Tighten clip by turning spindle with torque wrench -C- (take care to keep tool straight).
- ◆ Due to the hard material of the CV joint boot (as opposed to rubber), a stainless steel hose clip is required; this can only be tightened using clamp tensioner - V.A.G 1682- .
- ◆ Tightening torque: 20 Nm.
- ◆ Use torque wrench with 5...50 Nm adjustment range (e.g. - V.A.G 1331- ).
- ◆ Make sure thread of spindle on tool -A- turns freely. Lubricate with MoS<sub>2</sub> grease if necessary.
- ◆ If the thread is stiff (e.g. due to dirt), the required clamping force will not be attained at the hose clip when the specified tightening torque is applied.



## 7.5 Checking outer constant velocity joint

Outer constant velocity joint with cap cannot be dismantled.

Only a visual inspection can be performed on outer constant velocity joint with cap.

Grease remaining in joint must be free from water and dirt.

If the visual inspection reveals wear or damage on the balls or ball races, the complete outer constant velocity joint with cap must be renewed.

Quantities and type of grease for drive shaft with outer constant velocity joint ➔ [page 268](#) .

## 7.6 Checking inner constant velocity joint

The joint should be dismantled to renew dirty grease or for checking the balls and ball races for wear and damage.

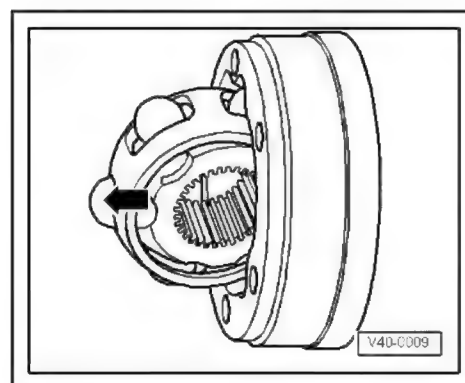
#### Dismantling



Note

*Ball hub and joint body are paired and must be marked before dismantling. Ensure that the balls run in the same races after assembly.*

- Swivel ball hub and ball cage.
- Press out joint body in direction of -arrow-.
- Push balls out of cage.





- Align ball hub with cage as shown -arrows- and pivot hub out of cage.
- Check joint, ball hub, ball cage and balls for pitting and signs of seizure.



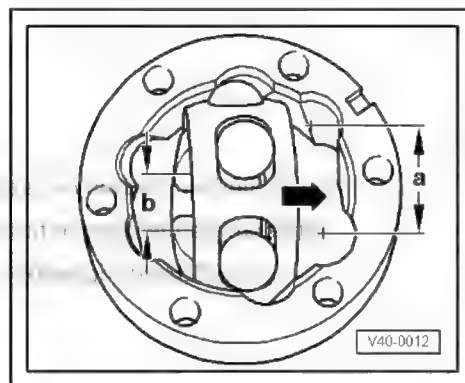
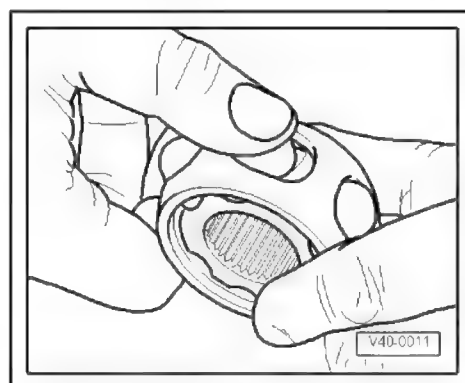
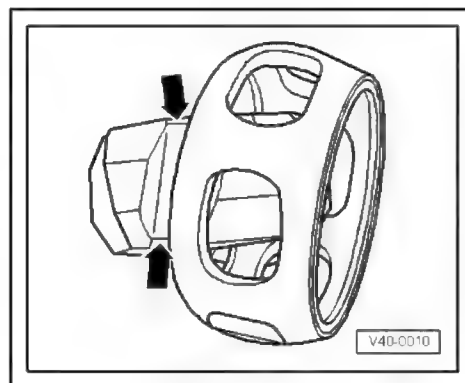
#### Note

*Excessive backlash in the joint will cause knocking or jolts under load change. In such cases the joint must be renewed. Polished areas and visible tracks in the ball races are not a reason for renewing the joint.*

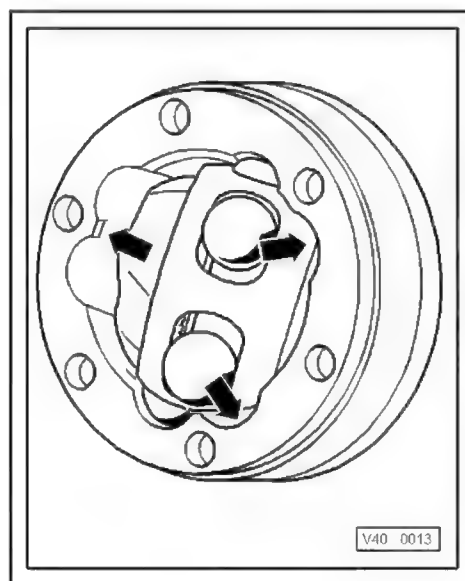
#### Assembling

- Insert hub into cage via the two chamfers. No specific installation position is required. Push balls into cage.
- Insert hub with cage and balls at a right angle to the joint body.

- ◆ When inserting, ensure that the wide spacing -a- on the joint body is aligned with the narrow spacing -b- on the hub after swivelling in.
- ◆ Chamfer on internal diameter of ball hub (splines) must face drive shaft.



- Swivel the hub into the joint body; at the same time the hub must be swivelled out of the cage -arrows- far enough to allow the balls to fit into the ball races.





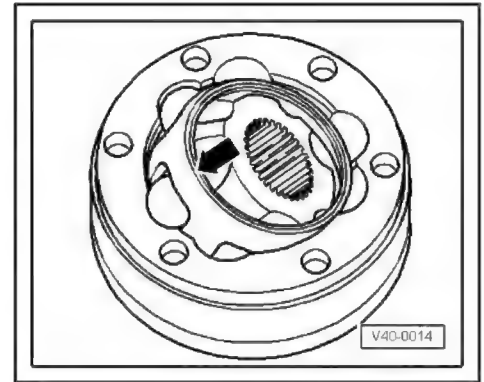
- Swivel in the hub with balls by applying firm pressure on the cage -arrow-.

#### Checking function of constant velocity joint

The constant velocity joint has been correctly assembled if the ball hub can be moved by hand backwards and forwards over its entire axial range of movement.

- Pack required amount of grease into joint body.

Quantities and type of grease for drive shaft with inner constant velocity joint ➔ [page 268](#).



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## 43 – Self-levelling suspension

### 1 Electronic damping control

⇒ "1.1 Overview of fitting locations - electronic damping control",  
page 282

⇒ "1.2 Re-adapting reference position (default position)",  
page 283

⇒ "1.3 Bleeding or charging system", page 284

#### 1.1 Overview of fitting locations - electronic damping control

1 - Front left vehicle level sender - G78-

- ☐ Removing and installing ⇒ [page 286](#)
- ☐ Re-adapting reference position (default position) following disconnection ⇒ [page 283](#)
- ☐ Checking ⇒ Vehicle diagnostic tester in Guided Fault Finding

2 - Air spring (front left)

- ☐ With front left shock absorber damping adjustment valve - N336-
- ☐ Removing and installing ⇒ [page 238](#)
- ☐ Charging ⇒ [page 284](#)

3 - Front right vehicle level sender - G289-

- ☐ Removing and installing ⇒ [page 286](#)
- ☐ Re-adapting reference position (default position) following disconnection ⇒ [page 283](#)
- ☐ Checking ⇒ Vehicle diagnostic tester in Guided Fault Finding

4 - Air spring (front right)

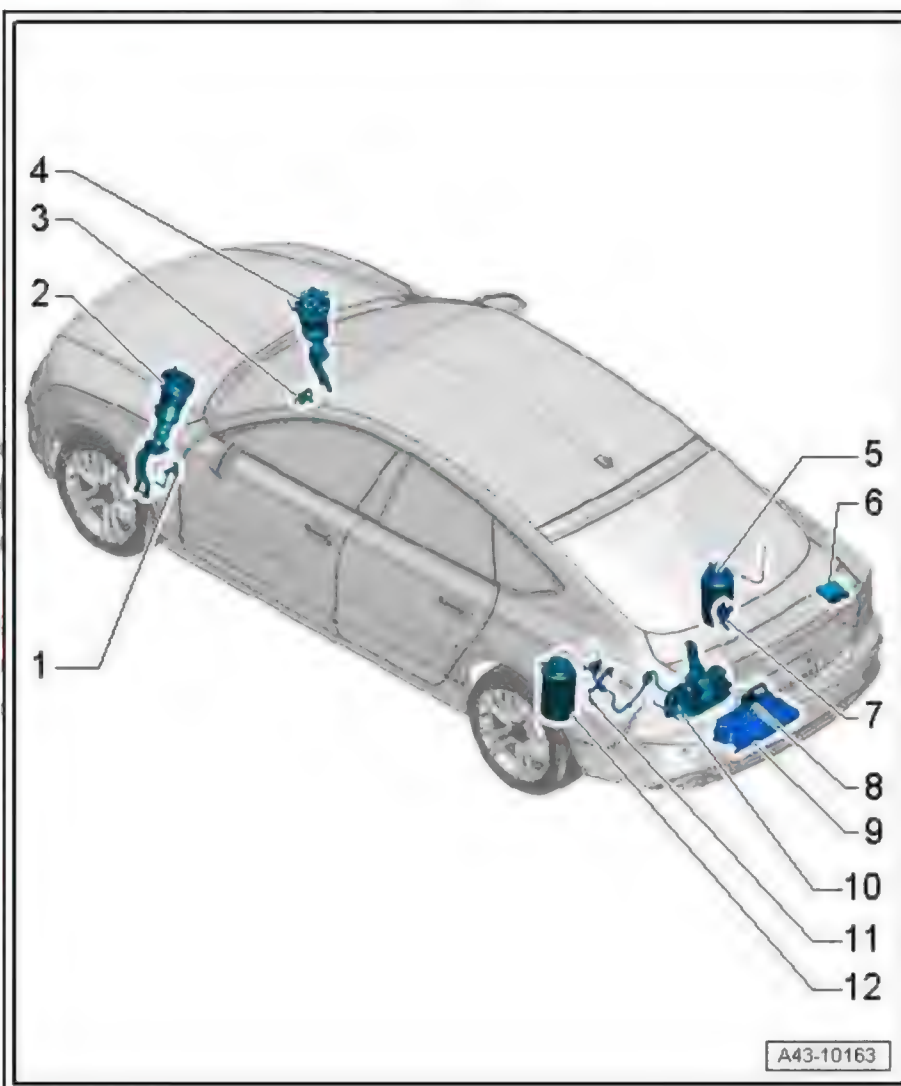
- ☐ With front right shock absorber damping adjustment valve - N337-
- ☐ Removing and installing ⇒ [page 238](#)
- ☐ Charging ⇒ [page 284](#)

5 - Air spring (rear right)

- ☐ Removing and installing ⇒ [page 223](#)
- ☐ Charging ⇒ [page 284](#)

6 - Adaptive suspension control unit - J197-

- ☐ Removing and installing ⇒ [page 295](#)
- ☐ For correct version refer to ⇒ Electronic parts catalogue







#### 7 - Rear right vehicle level sender - G77-

- ☐ Removing and installing ⇒ [page 287](#)
- ☐ Re-adapting reference position (default position) following disconnection ⇒ [page 283](#)
- ☐ Checking ⇒ Vehicle diagnostic tester in **Guided Fault Finding**

#### 8 - Solenoid valve block

- ☐ ⇒ [page 306](#)

#### 9 - Accumulator

- ☐ Removing and installing ⇒ [page 309](#)

#### 10 - Air supply unit

- ☐ ⇒ **"3.2 Exploded view - air supply unit", page 291**
- ☐ If air supply unit is renewed, adaptive suspension compressor relay - J403- must also be renewed. Fitting location ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

#### 11 - Rear left vehicle level sender - G76-

- ☐ Removing and installing ⇒ [page 287](#)
- ☐ Re-adapting reference position (default position) following disconnection ⇒ [page 283](#)
- ☐ Checking ⇒ Vehicle diagnostic tester in **Guided Fault Finding**

#### 12 - Air spring (rear left)

- ☐ Removing and installing ⇒ [page 223](#)
- ☐ Charging ⇒ [page 284](#)

## 1.2 Re-adapting reference position (default position)



### Note

*The reference position (default setting) of the suspension must always be adapted and the basic headlight setting must always be checked when:*

- ◆ Lower transverse link has been removed and installed or renewed,
- ◆ Subframe has been renewed,
- ◆ Work has been performed on the vehicle level sender,
- ◆ Vehicle level sender has been renewed,
- ◆ Coupling rod for vehicle level sender has been unbolted from lower transverse link,
- ◆ Adaptive suspension control unit - J197- has been renewed.

#### Requirements:

- The vehicle must be standing on a level surface.
- The vehicle must be unladen.

Adaption of the reference position (default position) is performed using the vehicle diagnostic tester :

#### VAS PC

Connect up ⇒ Vehicle diagnostic tester.

- Select **Guided Functions** mode.
- Select "34 - Adaptive suspension control unit".





- Select “J197 - Re-adapting reference position” and follow instructions on screen.

#### ODIS - Offboard Diagnostic Information System

Connect up ⇒ Vehicle diagnostic tester.

- Select **Diagnosis** mode and begin diagnosis.
- Select **Control units** tab.
- Select “34 - Adaptive suspension control unit”.
- Select “J197 - Re-adapting reference position” and follow instructions on screen.



#### Note

- ◆ If the 'reference position has been re-adapted', the camera control unit - J852- must be recalibrated on vehicles with lane departure warning function ⇒ [page 365](#).
- ◆ Perform basic setting of headlights ⇒ *Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights*.

### 1.3 Bleeding or charging system

Bleeding and charging the air spring system is performed using the vehicle diagnostic tester :

#### VAS PC

Connect up ⇒ Vehicle diagnostic tester.

- Select **Guided Functions** mode.
- Select “34 - Adaptive suspension control unit”.
- Select “J197 - Bleeding or charging system” and follow instructions on screen.

#### ODIS - Offboard Diagnostic Information System

Connect up ⇒ Vehicle diagnostic tester.

- Select **Diagnosis** mode and begin diagnosis.
- Select **Control units** tab.
- Select “34 - Adaptive suspension control unit”.
- Select “J197 - Bleeding or charging system” and follow instructions on screen.





## 2 Vehicle level senders

⇒ "2.1 Exploded view - vehicle level senders", page 285

⇒ "2.2 Removing and installing front vehicle level senders G78 / G289", page 286

⇒ "2.3 Removing and installing rear vehicle level senders G76 / G77", page 287

### 2.1 Exploded view - vehicle level senders

#### 1 - Nut

- ☐ 9 Nm
- ☐ Self-locking
- ☐ Renew

#### 2 - Bolt

- ☐ 9 Nm

#### 3 - Rear vehicle level sender

- ☐ Left side: rear left vehicle level sender - G76-
- ☐ Right side: rear right vehicle level sender - G77-
- ☐ Removing and installing  
⇒ [page 287](#)

#### 4 - Bolt

- ☐ 5 Nm

#### 5 - Bracket

- ☐ For vehicle level sender (rear)

#### 6 - Bolt

- ☐ Tightening torque  
⇒ [Item 8 \(page 203\)](#)

#### 7 - Nut

- ☐ Always renew if removed

#### 8 - Bolt

- ☐ 9 Nm

#### 9 - Bracket

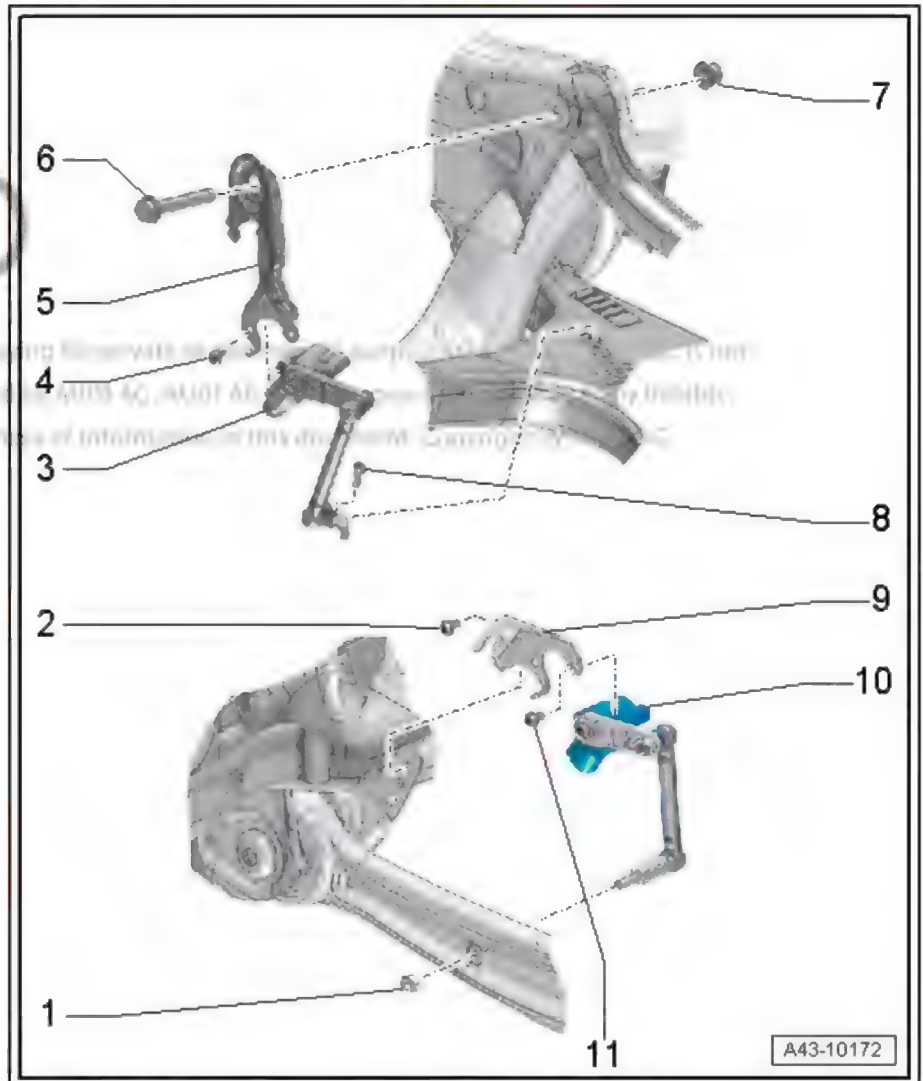
- ☐ For vehicle level sender (front)

#### 10 - Front vehicle level sender

- ☐ Left side: front left vehicle level sender - G78-
- ☐ Right side: front right vehicle level sender - G289-
- ☐ Removing and installing ⇒ [page 286](#)

#### 11 - Bolt

- ☐ 5 Nm



#### General notes:

Vehicles with adaptive suspension and/or gas discharge headlights have automatic headlight range control fitted as standard



equipment ⇒ Electrical system; Rep. gr. 94 ; Automatic headlight range control; Exploded view - automatic headlight range control .

The adaptive suspension and the automatic headlight range control functions require information on the compression and rebound travel at the front and rear suspension.

For this purpose, the position of the left/right transverse link in relation to the body is transferred to the rear left vehicle level sender - G76- and the rear right vehicle level sender - G77- via a coupling rod. The senders then transmit electrical signals to the adaptive suspension control unit - J197- .

On the front axle these signals are sent by the front left vehicle level sender - G78- and front right vehicle level sender - G289- to the adaptive suspension control unit - J197- .

These signals are required for calculating the current attitude of the vehicle.

The automatic headlight range control reacts to changes in the suspension height (attitude of the vehicle).

The following situations may produce a change in the suspension height:

- ◆ Towing mode
- ◆ Different loads (vehicle unladen, partly laden or fully laden)



#### Note

*The reference position (default setting) of the suspension must always be adapted and the basic headlight setting must always be checked when:*

- ◆ Lower transverse link has been removed and installed or renewed,
- ◆ Subframe has been renewed,
- ◆ Work has been performed on the vehicle level sender,
- ◆ Vehicle level sender has been renewed,
- ◆ Coupling rod for vehicle level sender has been unbolted from transverse link.

## 2.2 Removing and installing front vehicle level senders -G78- / -G289-

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1410-





## Removing

- Unplug connector -2-.
- Unscrew nut (not visible in illustration) on mounting -3-.
- Remove bolt -1-.
- Detach vehicle level sender -4-.

## Installing

Installation is carried out in reverse sequence. Note the following:

- Lever of sender must face forwards.
- Locating hook on sender bracket must engage on subframe.
- Re-adapt reference position  
⇒ ["1.2 Re-adapting reference position \(default position\)", page 283](#).
- Perform basic setting of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .

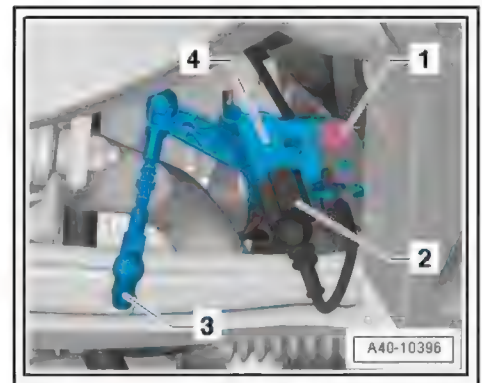
## Tightening torques

- ◆ ⇒ ["4.1 Exploded view - transverse links", page 203](#)

## 2.3 Removing and installing rear vehicle level senders -G76- / -G77-

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1410-



## Removing

- Remove wheel.
- Unplug electrical connector -2-.
- Unscrew bolt -1- for coupling rod.
- Remove bolts -3- and detach vehicle level sender.

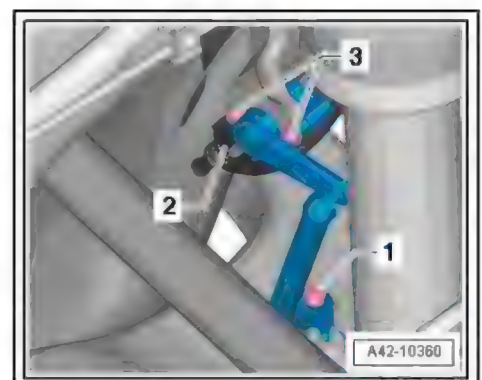
## Installing

Installation is carried out in reverse sequence. Note the following:

- Lever of sender must face forwards.
- Re-adapt reference position ⇒ [page 283](#) .
- Perform basic setting of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .

## Tightening torques

- ◆ ⇒ ["4.1 Exploded view - transverse links", page 203](#)







### 3 Air suspension

⇒ ["3.1 Overview of fitting locations - electrical components", page 288](#)

⇒ ["3.2 Exploded view - air supply unit", page 291](#)

⇒ ["3.3 Exploded view - air pipes", page 293](#)

⇒ ["3.4 Removing and installing adaptive suspension control unit J197", page 295](#)

⇒ ["3.5 Servicing air pipe", page 296](#)

⇒ ["3.6 Renewing connection piece", page 300](#)

⇒ ["3.7 Removing and installing air supply unit", page 301](#)

⇒ ["3.8 Removing and installing adaptive suspension drain valve N111", page 304](#)

⇒ ["3.9 Removing and installing solenoid valve block", page 306](#)

⇒ ["3.10 Removing and installing intake pipe with filter", page 308](#)

⇒ ["3.11 Removing and installing accumulator", page 309](#)

#### 3.1 Overview of fitting locations - electrical components



##### Note

- ◆ *The air pipes to the air springs/air spring struts are incorporated into the electrical wiring harness.*
- ◆ *Servicing air pipes ⇒ [page 296](#)*
- ◆ *Renewing connection piece ⇒ [page 300](#)*



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1 - Air spring strut (front left)

2 - Air pipe "red"

- ☐ From solenoid valve block to air spring strut (front left)
- ☐ Routing of air pipe (front) ➤ [page 290](#)

3 - Air pipe "green"

- ☐ From solenoid valve block to air spring strut (front right)
- ☐ Routing of air pipe (front) ➤ [page 290](#)

4 - Air spring strut (front right)

5 - Air pipe "blue"

- ☐ From solenoid valve block to air spring (rear right)
- ☐ Routing of air pipe (rear left) ➤ [page 291](#) .
- ☐ Routing of air pipe (rear right) ➤ [page 291](#) .

6 - Air spring (rear right)

7 - Air pipe "brown"

- ☐ From air supply unit to solenoid valve block
- ☐ Routing of air pipe to solenoid valve block ➤ [page 290](#) .

8 - Solenoid valve block

- ☐ Identification of pipes on solenoid valve block ➤ [page 290](#)

9 - Accumulator

- ☐ 6 Nm

10 - Air pipe "purple"

- ☐ From solenoid valve block to accumulator
- ☐ Routing of air pipe ➤ [page 291](#) .

11 - Air supply unit

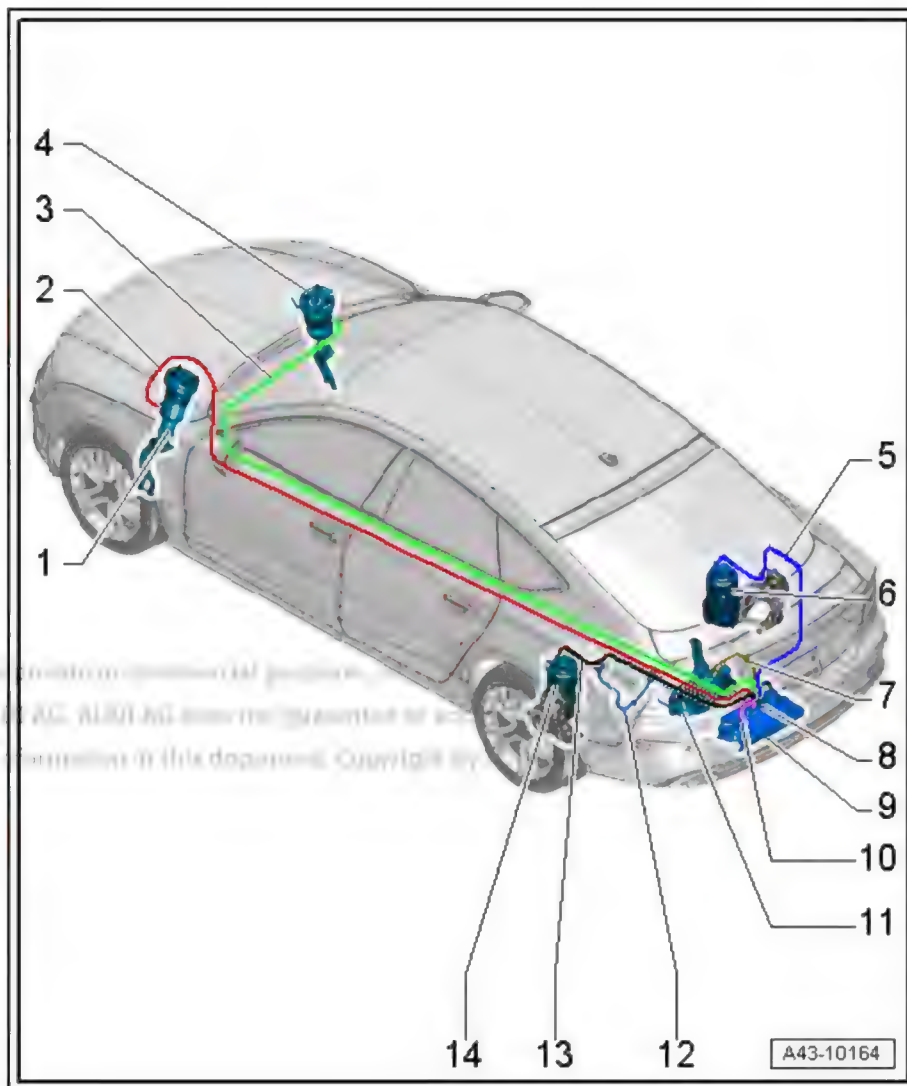
12 - Air intake pipe with filter and silencer

- ☐ Removing and installing ➤ [page 308](#)

13 - Air pipe "black"

- ☐ From solenoid valve block to air spring (rear left)
- ☐ Routing of air pipe (rear) ➤ [page 291](#) .

14 - Air spring (rear left)





## Identification of pipes on solenoid valve block



### Note

*The air pipes are incorporated into the wiring harness before the opening leading to the interior.*

The air pipes are colour-coded:

- 1 - Air pipe "brown": from air supply unit
- 2 - Air pipe "green": to air spring strut (front right)
- 3 - Air pipe "blue": to air spring (rear right)
- 4 - Air pipe "black": to air spring (rear left)
- 5 - Air pipe "red": to air spring strut (front left)
- 6 - Air pipe "purple": to accumulator

Servicing cutting location for air pipe ➔ [page 294](#)

### Tightening torques

- ◆ ➔ ["3.3 Exploded view - air pipes", page 293](#)

Routing of air pipe from air supply unit to exterior solenoid valve block

Air pipe -4- goes from air supply unit -6- to solenoid valve block, and is incorporated into wiring harness -1-.

- 2 - Pipe connection piece
- 3 - Bracket
- 5 - Clip

### Tightening torques

- ◆ ➔ ["3.3 Exploded view - air pipes", page 293](#)

Routing of air pipe to air spring strut (front)

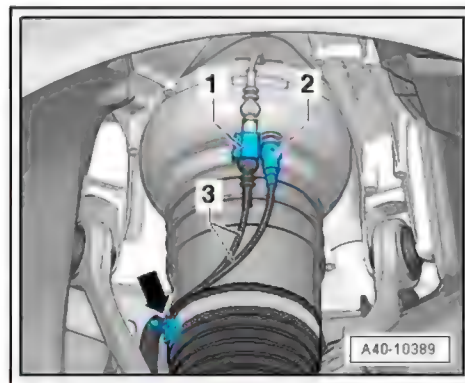
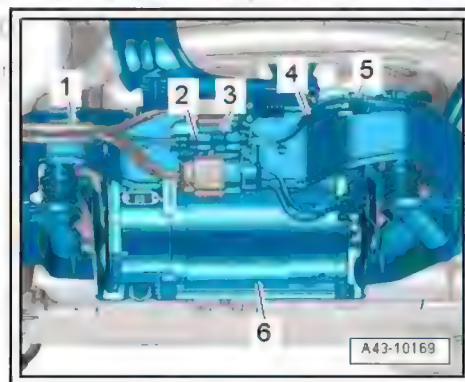
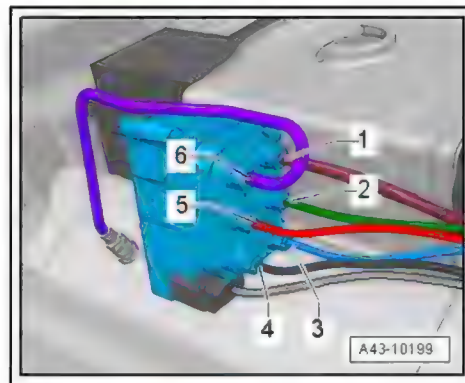
Air pipe is incorporated into wiring harness at clip -arrow-.

- Residual pressure valve -2- must not be loosened.

Servicing cutting location for air pipe ➔ [page 294](#)

### Tightening torques

- ◆ ➔ ["3.3 Exploded view - air pipes", page 293](#)





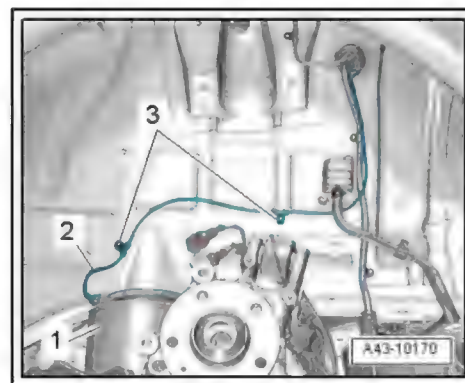


#### Routing of air pipe to air spring (rear left)

- 1 - Air spring (rear)
- 2 - Air pipe
- 3 - Clip

#### Tightening torques

- ◆ ⇒ ["3.3 Exploded view - air pipes", page 293](#)

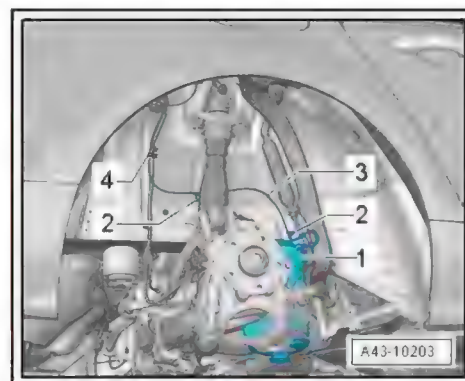


#### Routing of air pipe to air spring (rear right)

- 1 - Air spring (rear)
- 2 - Clip
- 3 - Air pipe
- 4 - Cable ties

#### Tightening torques

- ◆ ⇒ ["3.3 Exploded view - air pipes", page 293](#)

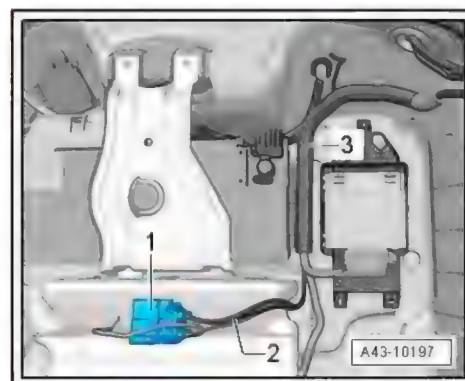


#### Routing of air pipe from air supply unit to valve block

Air pipe -2- goes to solenoid valve block -1-, and is incorporated into wiring harness -3-.

#### Tightening torques

- ◆ ⇒ ["3.3 Exploded view - air pipes", page 293](#)



### 3.2 Exploded view - air supply unit



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1 - Bolt

- 9 Nm

2 - Bracket

- For securing complete air supply unit to spare wheel well
- Removing and installing  
⇒ [page 301](#)

3 - Clip

4 - Air intake pipe with filter

- Removing and installing  
⇒ [page 308](#)

5 - Air pipe

- Between solenoid valve block and air supply unit
- Overview of air pipes  
⇒ [Item 7 \(page 289\)](#)
- Tightening torque of connection piece for air pipe  
⇒ [page 293](#)

6 - Pipe connector

7 - Bracket

8 - Air supply unit with adaptive suspension drain valve - N111-

- Removing and installing  
⇒ [page 303](#)
- Removing and installing adaptive suspension drain valve - N111-  
⇒ [page 304](#)
- If air supply unit is renewed, adaptive suspension compressor relay - J403- must also be renewed. Fitting location ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

9 - Sleeve screw

- 4x
- 7.5 Nm

10 - Spring

- 4x

11 - Rubber mounting

- 4x

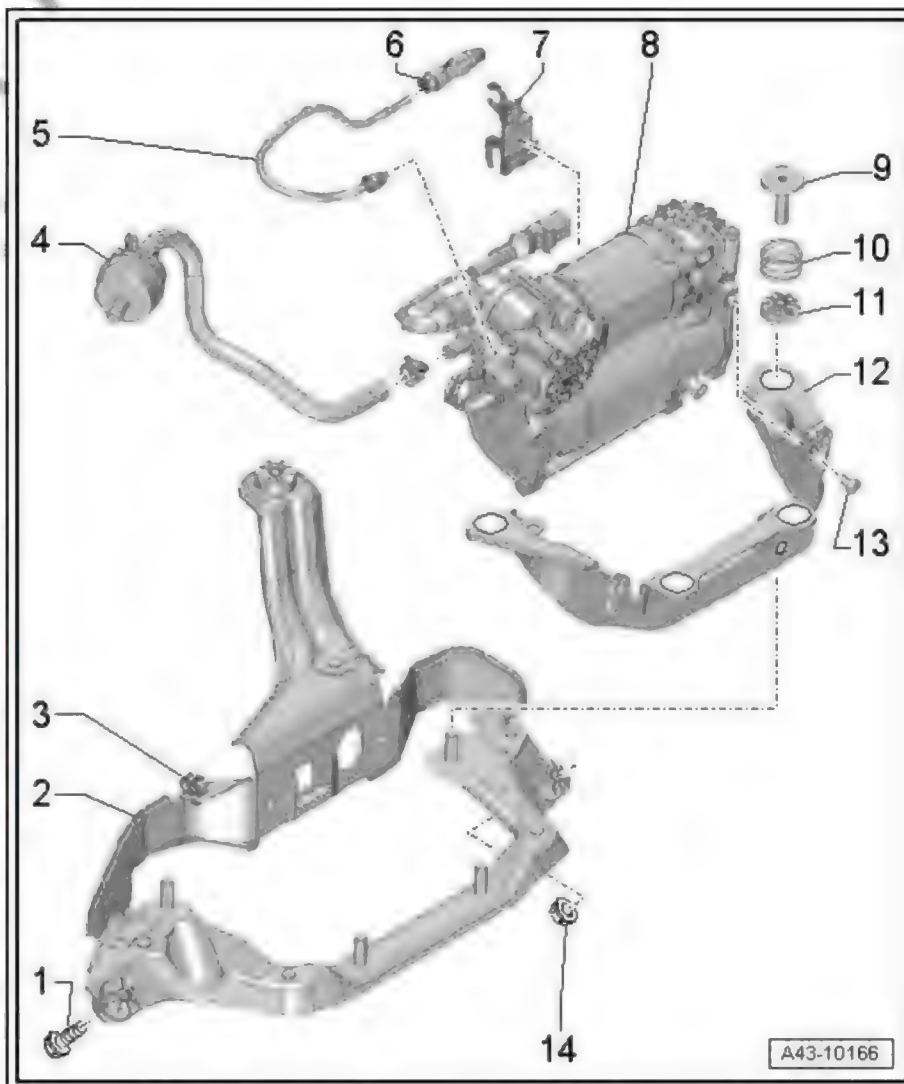
12 - Bracket

13 - Bolt

- For securing air supply unit to bracket
- 3x
- 9 Nm

14 - Nut

- 9 Nm

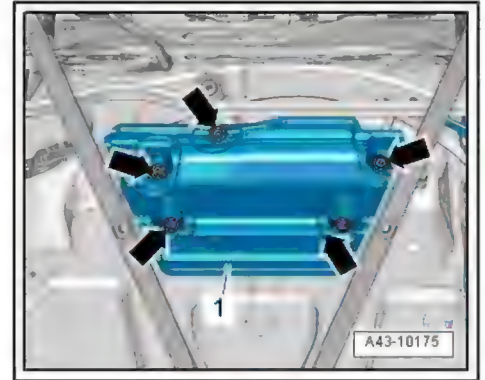






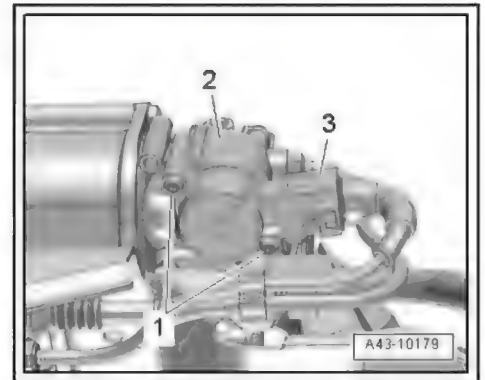
Tightening torque - stone deflector

- Tighten nuts -arrows- to 9 Nm.



Tightening torque - adaptive suspension drain valve - N111-

Tighten bolts -1- to 5 Nm.



### 3.3 Exploded view - air pipes

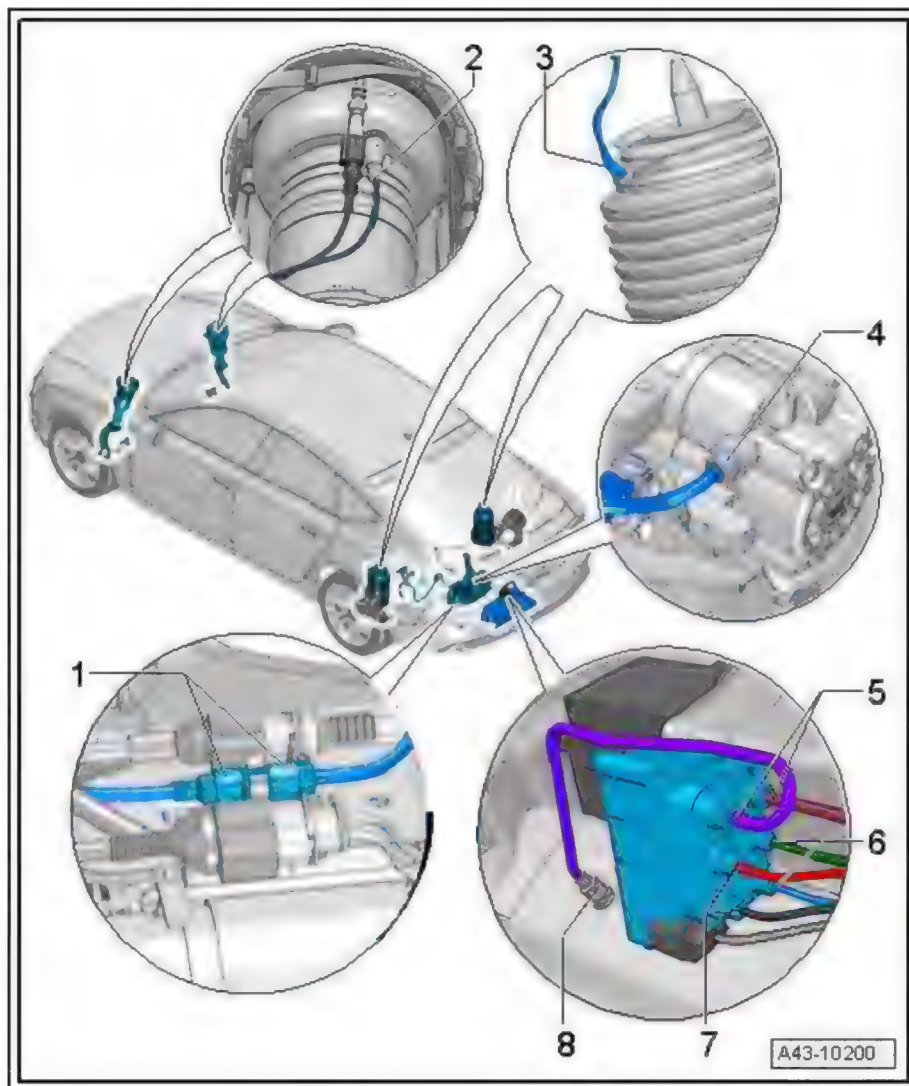
Air pipes



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- 1 - Pipe connector
- 2 - Connection piece on air spring strut (front)
  - 3 Nm
- 3 - Connection piece on air spring (rear)
  - 2.5 Nm
- 4 - Connection piece on air supply unit
  - 3 Nm
- 5 - Connection pieces on solenoid valve block
  - 2x, 12 mm
  - 3.5 Nm
- 6 - Connection pieces on solenoid valve block
  - 2x, 10 mm
  - 2 Nm
- 7 - Connection pieces on solenoid valve block
  - 2x, 12 mm
  - 3.5 Nm
- 8 - Connection piece on accumulator
  - 5 Nm



## Connection points



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A - Cutting location on air pipe  
for air spring strut (front)

1 - New air pipe

2 - Sheathed pipe connector

3 - Original air pipe

4 - Wiring harness

B - Cutting location on air pipe  
for air spring (rear)

5 - New air pipe

6 - Sheathed pipe connector

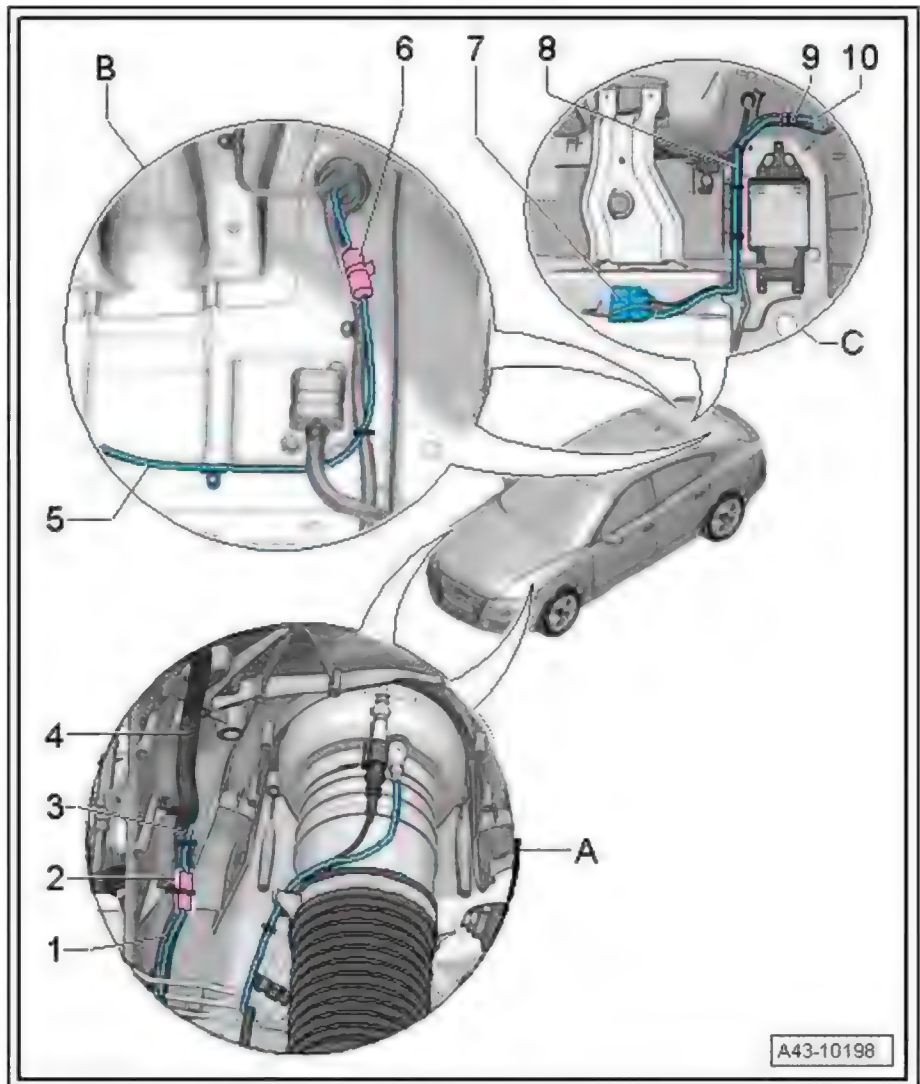
C - Cutting location on air pipe  
for solenoid valve block in in-  
terior

7 - New air pipe

8 - Wiring harness

9 - Sheathed pipe connector

10 - Original air pipe



### 3.4 Removing and installing adaptive sus- pension control unit - J197-

The adaptive suspension control unit - J197- is located behind the side trim in the luggage compartment (right-side).

#### Removing

- When renewing control unit, select “Replace” function for relevant control unit using ⇒ Vehicle diagnostic tester in Guided Functions mode.

- Follow the instructions on the screen.

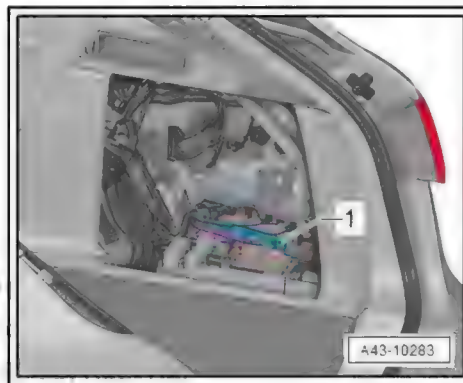
- Switch off ignition.



- Remove storage area in luggage compartment (right-side).
- Release relay and fuse holder and place to one side.



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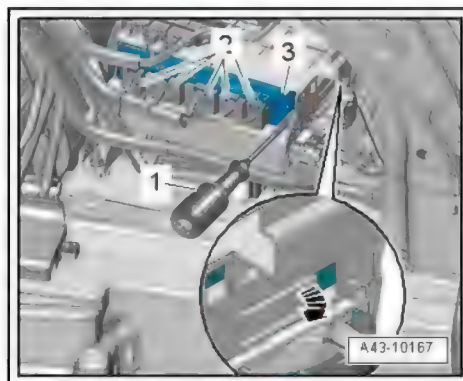


- Unplug electrical connectors -2-.
- Using a long screwdriver -1-, release catches on both sides -arrow- and detach adaptive suspension control unit - J197- -item 3-.

#### Installing

Installation is carried out in reverse sequence. Note the following:

- Re-adapt reference position ➔ [page 283](#) .

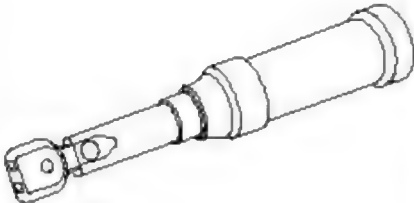
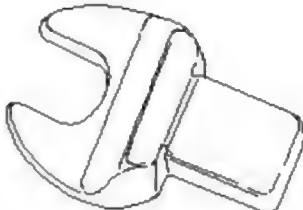
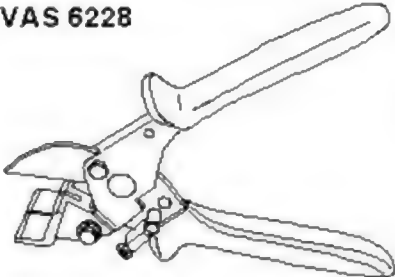


### 3.5 Servicing air pipe





Special tools and workshop equipment required

<p><b>V.A.G 1783</b></p> 	<p><b>V.A.G 1783/1</b></p> 
<p><b>VAS 6228</b></p> 	
	<p>G43-10001</p>

- ◆ Torque wrench - V.A.G 1783-
- ◆ Open end spanner insert (10 mm) - V.A.G 1783/1-
- ◆ Cutting pliers - VAS 6228-

#### Procedure

If the air pipe is damaged, the damaged section can be renewed.

In the event of leakage at the connection, the air pipe can be shortened by 10 mm and a new connection piece fitted  
⇒ [page 300](#) .



#### Note

- ◆ *The air pipes between the solenoid valve block and the accumulator and between the solenoid valve block and the air supply unit are replaced completely with new pipes (same as original equipment).*
- ◆ *Clean the area around the cutting point before cutting the air pipe.*
- ◆ *Any dirt entering the connections can cause malfunctions or failure of the system.*



- Clean sections in vicinity of connection piece and relevant cutting location.

Overview of cutting locations ➔ [page 294](#)

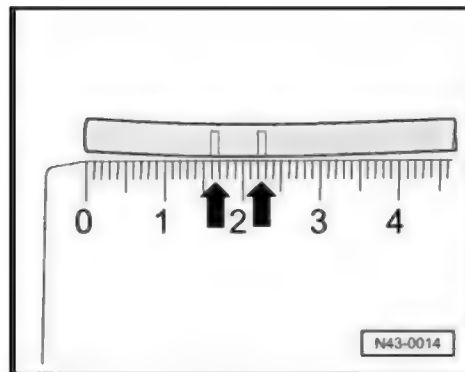
- Cut through air pipe at cutting location (at a right angle) using cutting pliers - VAS 6228- .
- Unscrew connection piece and remove air pipe.
- Then use waterproof pen to mark end of air pipe in vehicle and both ends of new air pipe.



#### Note

*Use 17 mm/22 mm marks to check whether air pipe has been properly inserted in connection piece.*

- Fit sponge rubber insulation to both pipes.
- Fit new pipe connector.



#### Note

*The connection pieces in the pipe connector are already tightened to torque. The air pipes only need to be pushed in.*

- Remove transport protection cap.



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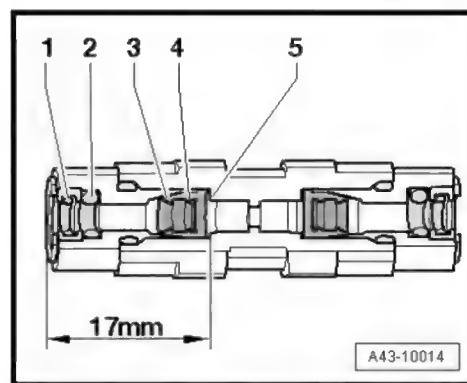


- Push old air pipe through seals -1- and -2-.
- Then push air pipe through sealing edges -3- and -4- of cutting ring in pipe connector as far as stop -5-, exerting more force as required.
- Fit sponge rubber insulation over connection pieces.
- Repeat this procedure with the new pipe.
- Renew connection piece ⇒ [page 300](#) .

Cutting location on air pipe for air spring strut (front)  
⇒ [Item A \(page 295\)](#)

- Release original air pipe from wiring harness.
- Sheathe wiring harness again in the proper manner.
- Service air pipe.
- Secure sheathed pipe connector and new air pipe to wiring harness with cable ties.

Cutting location on air pipe for air spring (rear)  
⇒ [Item B \(page 295\)](#)



Note

Route new air pipe ⇒ [Item 5 \(page 295\)](#) as shown in illustration.

- Service air pipe.
- Secure sheathed pipe connector and new air pipe with cable ties.

Cutting location on air pipe for solenoid valve block in interior  
⇒ [Item C \(page 295\)](#)



Note

*If air pipes are damaged at the solenoid valve block, the cutting location must be positioned in the vehicle interior (spare wheel well) because of the short pipe lengths.*

- Release original air pipe from wiring harness.
- Sheathe wiring harness again in the proper manner.
- Service air pipe.
- Secure sheathed pipe connector and new air pipe to wiring harness with cable ties.



Note

- ◆ *The vehicle must not be lowered from the lifting platform until the system has been recharged ⇒ [page 18](#) .*
- ◆ *Before charging the air spring system, check that the locating pin on the air spring is engaged correctly in the body. At the same time the retainers on the air spring must be correctly engaged under the wheel bearing housing ⇒ [page 217](#) .*

Tightening torques

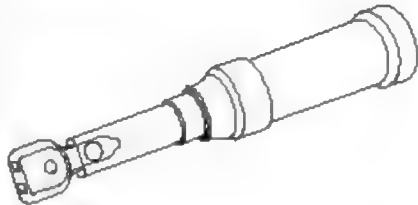
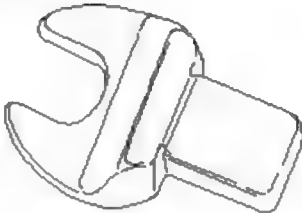
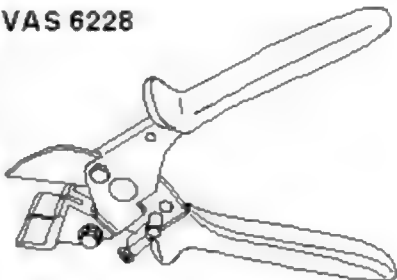

- ◆ ⇒ ["3.3 Exploded view - air pipes", page 293](#)





### 3.6 Renewing connection piece

Special tools and workshop  
equipment required

<b>V.A.G 1783</b> 	<b>V.A.G 1783/1</b> 
<b>VAS 6228</b> 	
	

G43-10001

- ◆ Torque wrench - V.A.G 1783-
- ◆ Open end spanner insert (10 mm) - V.A.G 1783/1-
- ◆ Cutting pliers - VAS 6228-

In the event of leakage at the connection, the air pipe can be shortened by 10 mm (if sufficient length is available) and a new connection piece fitted.



#### Note

- ◆ *Clean the area around the cutting point before cutting the air pipe.*
- ◆ *Any dirt entering the connections can cause malfunctions or failure of the system.*
- Clean area around connection piece.
- Unscrew connection piece and detach air pipe.
- Detach cutting ring from air pipe.



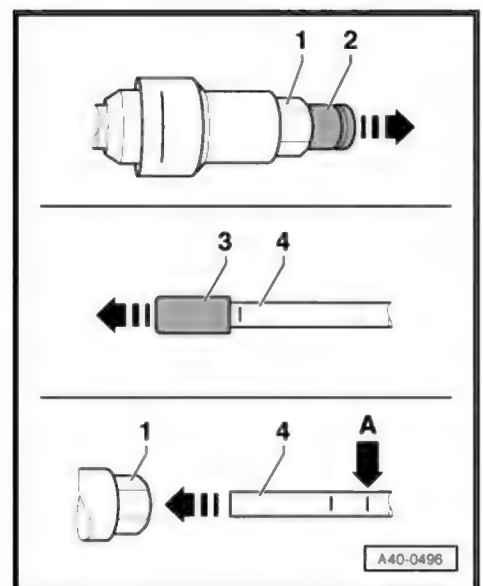
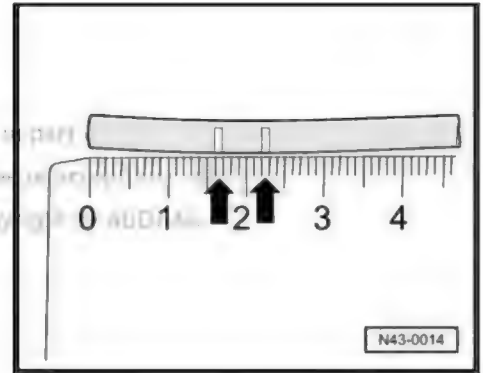
- Use cutting tool - VAS 6228- to cut through the air pipe at a right angle behind the impression made by the cutting ring.
- Then use waterproof pen to mark end of air pipe in vehicle.



**Note**

- ◆ Use 17 mm/22 mm marks to check whether air pipe has been properly inserted in connection piece.
- ◆ Always renew connection piece.
- ◆ Important: Always keep to specified tightening torque.

- Screw in and tighten new connection piece by hand  
⇒ ["3.3 Exploded view - air pipes", page 293](#).
- Only remove transport protection caps -2- and -3- immediately prior to attachment of air pipe -4-.
- Install and secure air pipe in vehicle with appropriate clips and/or grommets. If necessary, renew cable ties that have been cut open.
- Detach transportation caps -2- and -3-.
- Exerting moderate pressure, push air pipe -4- all the way into connection piece -1-.
- Air pipes have been properly fitted if only one of the two marks is visible -arrow A-.



### 3.7 Removing and installing air supply unit

⇒ ["3.7.1 Removing and installing air supply unit with bracket", page 301](#)

⇒ ["3.7.2 Removing and installing air supply unit", page 303](#)

#### 3.7.1 Removing and installing air supply unit with bracket

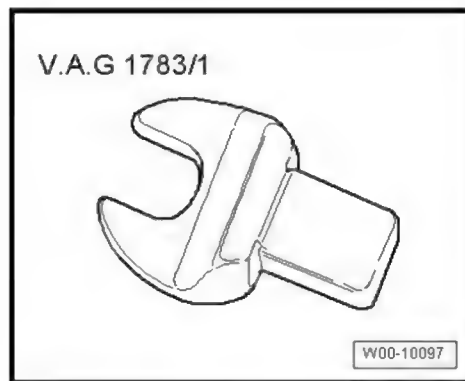
Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1783-





- ◆ Open end spanner insert (10 mm) - V.A.G 1783/1-



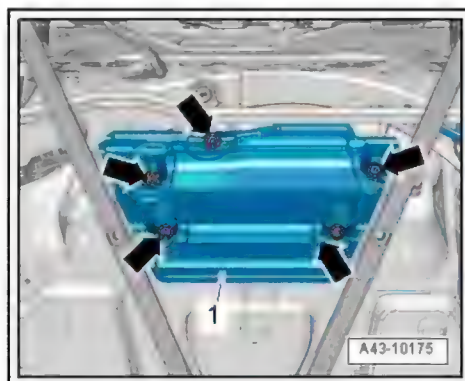
## Removing



### Note

*The air supply unit is bolted to the underbody (spare wheel well) via the bracket.*

- Bleed air spring system ⇒ [page 284](#) .
- When renewing control unit, select "Replace" function for relevant control unit using ⇒ Vehicle diagnostic tester in Guided Functions mode.
- Switch off ignition.
- Remove nuts -arrows-.
- Detach stone deflector -1-.



### Note

- ◆ *Make sure that no dirt enters the compressed air system.*
- ◆ *Clean the affected area **before detaching connection pieces** for air pipes or components of the compressed air system.*
- ◆ *Cover or seal off open air pipes and connections of the compressed air system immediately with a plug.*

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- Detach electrical connectors -2- and -4- from bracket and unplug.
- Release clamp -5- and detach intake pipe.
- Release air pipe -3- at bracket and detach.
- Remove nut -1- and bolts -arrows-.
- Take out bracket with air supply unit -5-.

#### Installing

Installation is carried out in reverse sequence. Note the following:



#### Note

- ◆ *The vehicle must not be lowered from the lifting platform until the system has been recharged ⇒ [page 18](#).*
- ◆ *Before charging the air spring system, check that the locating pin on the air spring is engaged correctly in the body. At the same time the retainers on the air spring must be correctly engaged under the wheel bearing housing ⇒ [page 217](#).*

Charge air spring system ⇒ [page 284](#).

If air supply unit has been renewed, adaptive suspension compressor relay - J403- must also be renewed. Fitting location  
⇒ Current flow diagrams, Electrical fault finding and Fitting locations

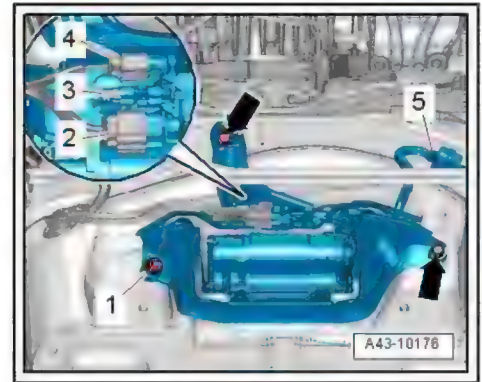
#### Tightening torques

- ◆ ⇒ [“3.2 Exploded view - air supply unit”, page 291](#)
- ◆ ⇒ [“3.3 Exploded view - air pipes”, page 293](#)
- ◆ ⇒ [Fig. “Tightening torque - stone deflector”, page 293](#)

### 3.7.2 Removing and installing air supply unit

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1783-



#### Removing

- Remove bracket with air supply unit ⇒ [page 301](#).





#### Note

- ◆ *Make sure that no dirt enters the compressed air system.*
- ◆ *Clean the affected area before detaching connection pieces for air pipes or components of the compressed air system.*
- ◆ *Cover or seal off open air pipes and connections of the compressed air system immediately with a plug.*
- Release air pipe and electrical wiring from clip -1-.
- Remove sleeve screws -arrows- and detach air supply unit -2-.

#### Installing

Installation is carried out in reverse sequence. Note the following:



#### Note

- ◆ *The vehicle must not be lowered from the lifting platform until the system has been recharged ➔ [page 18](#).*
- ◆ *Before charging the air spring system, check that the locating pin on the air spring is engaged correctly in the body. At the same time the retainers on the air spring must be correctly engaged under the wheel bearing housing ➔ [page 217](#).*

If air supply unit has been renewed, adaptive suspension compressor relay - J403- must also be renewed. Fitting location  
⇒ Current flow diagrams, Electrical fault finding and Fitting locations

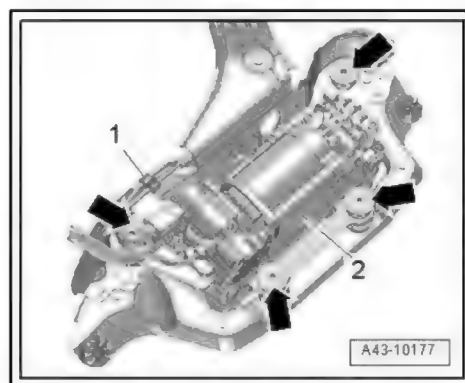
#### Tightening torques

- ◆ ➔ [“3.2 Exploded view - air supply unit”, page 291](#)
- ◆ ➔ [“3.3 Exploded view - air pipes”, page 293](#)

### 3.8 Removing and installing adaptive suspension drain valve - N111-

#### Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1783-



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## Removing



### Note

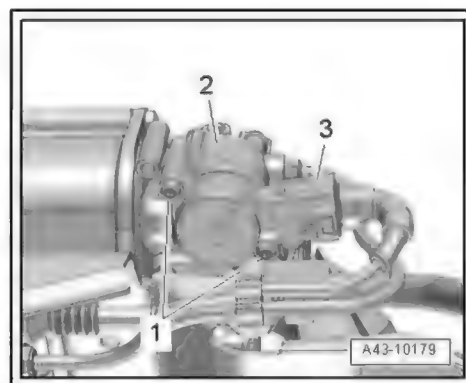
*The adaptive suspension drain valve - N111- is located at the air supply unit.*

- Remove air supply unit ➤ [page 303](#) .



### Note

- ◆ *Make sure that no dirt enters the compressed air system.*
- ◆ *Clean the affected area before detaching connection pieces for air pipes or components of the compressed air system.*
- ◆ *Cover or seal off open air pipes and connections of the compressed air system immediately with a plug.*
- Unplug electrical connector -3- at adaptive suspension drain valve - N111- -item 2-.
- Remove bolts -1-.



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- Take out adaptive suspension drain valve - N111- -5- together with O-rings -1- and -4-, spring -3- and armature -2-.



#### Note

O-ring -1- may have remained in the housing of the air supply unit.

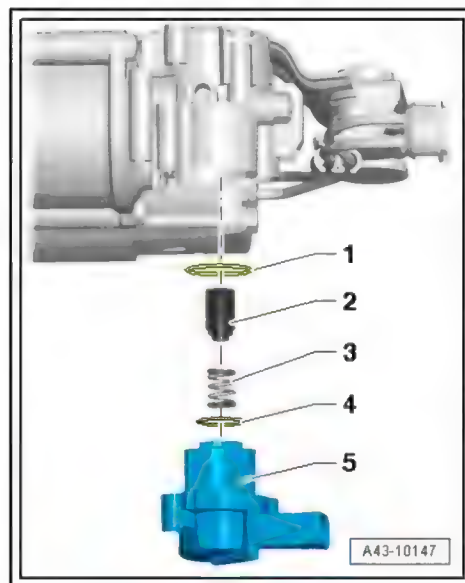
#### Installing

Installation is carried out in reverse sequence. Note the following:



#### Note

- ♦ The vehicle must not be lowered from the lifting platform until the system has been recharged ➔ [page 18](#) .
- ♦ Before charging the air spring system, check that the locating pin on the air spring is engaged correctly in the body. At the same time the retainers on the air spring must be correctly engaged under the wheel bearing housing ➔ [page 217](#) .



#### Note

Always renew O-rings.

- Lubricate new O-rings -1- and -4- with grease provided.
- Make sure armature -2- is installed in correct position. Chamfered end faces spring -3-.
- Adaptive suspension drain valve - N111- must be kept straight while installing and tightening bolts.
- Charge air spring system ➔ [page 284](#) .

#### Tightening torques

- ♦ ➔ [“3.2 Exploded view - air supply unit”, page 291](#)
- ♦ ➔ [“3.3 Exploded view - air pipes”, page 293](#)
- ♦ ➔ [Fig. “Tightening torque - adaptive suspension drain valve - N111-”, page 293](#)

### 3.9 Removing and installing solenoid valve block

#### Special tools and workshop equipment required

- ♦ Torque wrench - V.A.G 1410-



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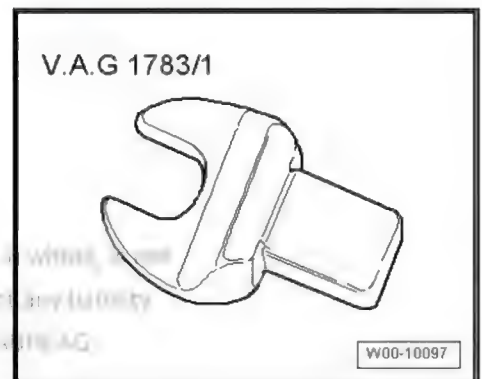




◆ Torque wrench - V.A.G 1783-



◆ Open end spanner insert (10 mm) - V.A.G 1783/1-



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Removing



Note

*Solenoid valve block is located at air supply unit.*

- Position vehicle on lifting platform ➔ [page 18](#) .
- Bleed system ➔ [page 284](#) .
- Switch off ignition.
- Remove luggage compartment floor covering or take out spare wheel ➔ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Exploded view - luggage compartment floor .



Note

- ◆ *Make sure that no dirt enters the compressed air system.*
- ◆ *Clean the affected area before detaching connection pieces for air pipes or components of the compressed air system.*
- ◆ *Cover or seal off open air pipes and connections of the compressed air system immediately with a plug.*





- Unplug electrical connector -2-.
- Unscrew air pipes -arrows- and protect immediately from dirt.
- Detach solenoid valve block -1-.

#### Installing

Installation is carried out in reverse sequence. Note the following:



#### Note

- ♦ *The vehicle must not be lowered from the lifting platform until the system has been recharged ⇒ [page 18](#) .*
- ♦ *Before charging the air spring system, check that the locating pin on the air spring is engaged correctly in the body. At the same time the retainers on the air spring must be correctly engaged under the wheel bearing housing ⇒ [page 217](#) .*

- Charge air spring system ⇒ [page 284](#) .

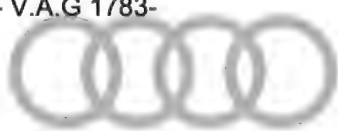
#### Tightening torques

- ♦ ⇒ ["3.2 Exploded view - air supply unit", page 291](#)
- ♦ ⇒ ["3.3 Exploded view - air pipes", page 293](#)

### 3.10 Removing and installing intake pipe with filter

#### Special tools and workshop equipment required

- ♦ Torque wrench - V.A.G 1783-



System of hydraulic pressure: Carrying the pressure in the system is the responsibility of the user. The user must ensure that the system is used in accordance with the instructions. The user must also ensure that the system is used in accordance with the instructions. The user must also ensure that the system is used in accordance with the instructions.



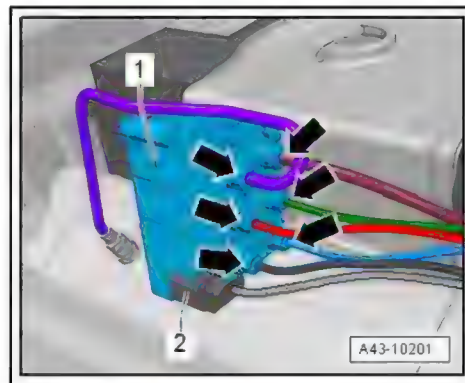
#### Removing

- Remove rear left wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (rear) .



#### Note

- ♦ *Make sure that no dirt enters the compressed air system.*
- ♦ *Clean the affected area before detaching connection pieces for air pipes or components of the compressed air system.*
- ♦ *Cover or seal off open air pipes and connections of the compressed air system immediately with a plug.*





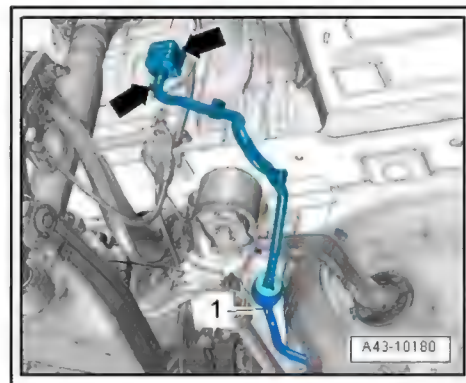


- Remove nuts -arrows-.
- Release clamp -1-, move clear intake pipe with filter and detach.

#### Installing

Installation is carried out in reverse sequence. Note the following:

- Install rear left wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (rear) .



### 3.11 Removing and installing accumulator

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1783-



- ◆ Vehicle diagnostic tester

#### Removing



Note

*The accumulator is installed in the spare wheel well.*

- Switch on ignition.
- Bleed accumulator ⇒ [page 284](#) .
- Detach cover for tool box.
- Detach solenoid valve block from tool box and take out tool box.



Note

- ◆ *Make sure that no dirt enters the compressed air system.*
- ◆ *Clean the affected area before detaching connection pieces for air pipes or components of the compressed air system.*
- ◆ *Cover or seal off open air pipes and connections of the compressed air system immediately with a plug.*



- Slowly loosen air pipe -1- at accumulator to dissipate air pressure. Unscrew air pipe when air pressure has been dissipated.
- Detach solenoid valve block -2- and move to one side.
- Unscrew nuts -arrows- and take out accumulator.

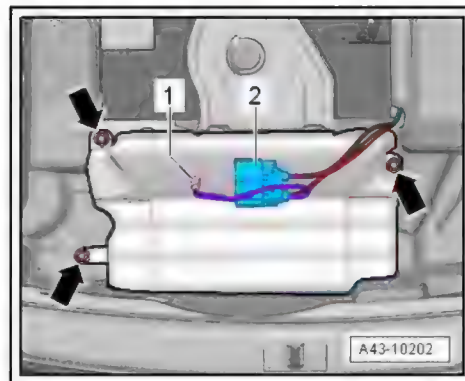
#### Installing

Installation is carried out in reverse sequence. Note the following:

- Charge accumulator ⇒ [page 284](#) .

#### Tightening torques

- ◆ Nuts for accumulator: 6 Nm
- ◆ ⇒ ["3.3 Exploded view - air pipes", page 293](#)



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## 4 Dynamic Ride Control (DRC)

⇒ [“4.1 System description - DRC”, page 311](#)

⇒ [“4.2 Overview of fitting locations - DRC”, page 312](#)

⇒ [“4.3 Exploded view - central valve”, page 314](#)

⇒ [“4.4 Removing and installing central valve”, page 315](#)

⇒ [“4.5 Removing and installing electronically controlled damping control unit J250 ”, page 315](#)

⇒ [“4.6 Checking DRC system”, page 316](#)

⇒ [“4.7 Checking DRC system pressure”, page 317](#)

⇒ [“4.8 Discharging and charging DRC system”, page 318](#)

### 4.1 System description - DRC

The DRC wheel damping system counteracts the pitch and roll of the body about the longitudinal and transverse axes to permit optimum handling. A driver-adjustable DRC with variable damping is installed on the Audi RS models.

In addition to the suppression of pitch and roll (comparable to the purely hydraulic DRC), the driver-adjustable DRC with variable damping offers the further option of setting different levels of damper stiffness by way of the Audi drive select controls. To achieve this, each shock absorber is provided with an additional element with integrated DC motor. The DC motors are activated by the electronically controlled damping control unit - J250- .

The driver can select several different damper settings:

- ◆ “COMFORT”
- ◆ “DYNAMIC”
- ◆ “AUTO”
- ◆ “INDIVIDUAL”

Use only the approved type of fluid when charging and topping up the system. Please refer to ⇒ [Electronic parts catalogue](#) .



- ◆ The “COMFORT” damper setting must be activated when discharging, evacuating and charging the DRC system on vehicles with variable damping.
- ◆ To discharge, evacuate and charge the DRC system, select address word 14 in “Guided Functions” and start the function **Charge DRC** ⇒ [Vehicle diagnostic tester](#).
- ◆ When this function is activated, the system switches to “COMFORT” mode and cannot be switched back manually. The yellow warning lamp in the instrument cluster lights up while the charging function is activated.

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Charging may only be performed at room temperature (approx. 20° Celsius).

Replacement shock absorbers and pipes are supplied empty.

Pipes/shock absorbers and central valves may only be discharged, evacuated and charged when they are installed in the vehicle and connected.

The vehicle must never be lowered onto its wheels when the DRC system is separated from the individual components (e.g. connection between pipe/shock absorbers/central valve).

When charging the DRC system, the gas accumulator leading to the pressure chambers at the piston in the central valve is automatically checked for leaks.

If the pressure of 22 bar could not be obtained, or if the pressure drops continuously when charging the DRC system, check all the separating couplings and connections for leaks and damage. If no irregularities are visible on the outside, the piston of the gas accumulator inside the central valve leading to the pressure chambers is leaking, so the central valve must be renewed.

Discharging, evacuating or charging the DRC system can only be performed at the drain/charge valve (front) and at the drain/charge valve (rear) of the shock absorbers in the relevant section of the system. Note the following:



#### CAUTION

Safety goggles must be worn for all procedures.

Discharge the relevant section of the system completely before removing or disconnecting any DRC components.

Shock absorbers may only be charged when they are installed in the vehicle and connected.

Pipes must not be bent.

When connecting and disconnecting pressure gauge -V.A.S 6209/2- , a small amount of fluid will always escape at the connection, but this is not critical. Repeated measurements should be avoided because the system loses a small amount of fluid every time the pressure tester -V.A.S 6209/2- is connected. The pressure reading will be about 0.3 bar lower than the previous value when the tester is reconnected. Several repeated measurements will thus cause the pressure in the system to drop below the minimum limit, or can cause failure of the system.

## 4.2 Overview of fitting locations - DRC



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**1 - Front suspension strut with drain/charge valve**  
⇒ [page 314](#)

- ☐ Additional element with integrated DC motor on vehicles with variable damping

**2 - Warning lamp**

- ☐ On vehicles with variable damping

**3 - Operating unit for Audi drive select**

- ☐ On vehicles with variable damping

**4 - Electronically controlled damping control unit - J250-**

- ☐ On vehicles with variable damping
- ☐ Removing and installing  
⇒ [page 315](#)

**5 - Central valves**

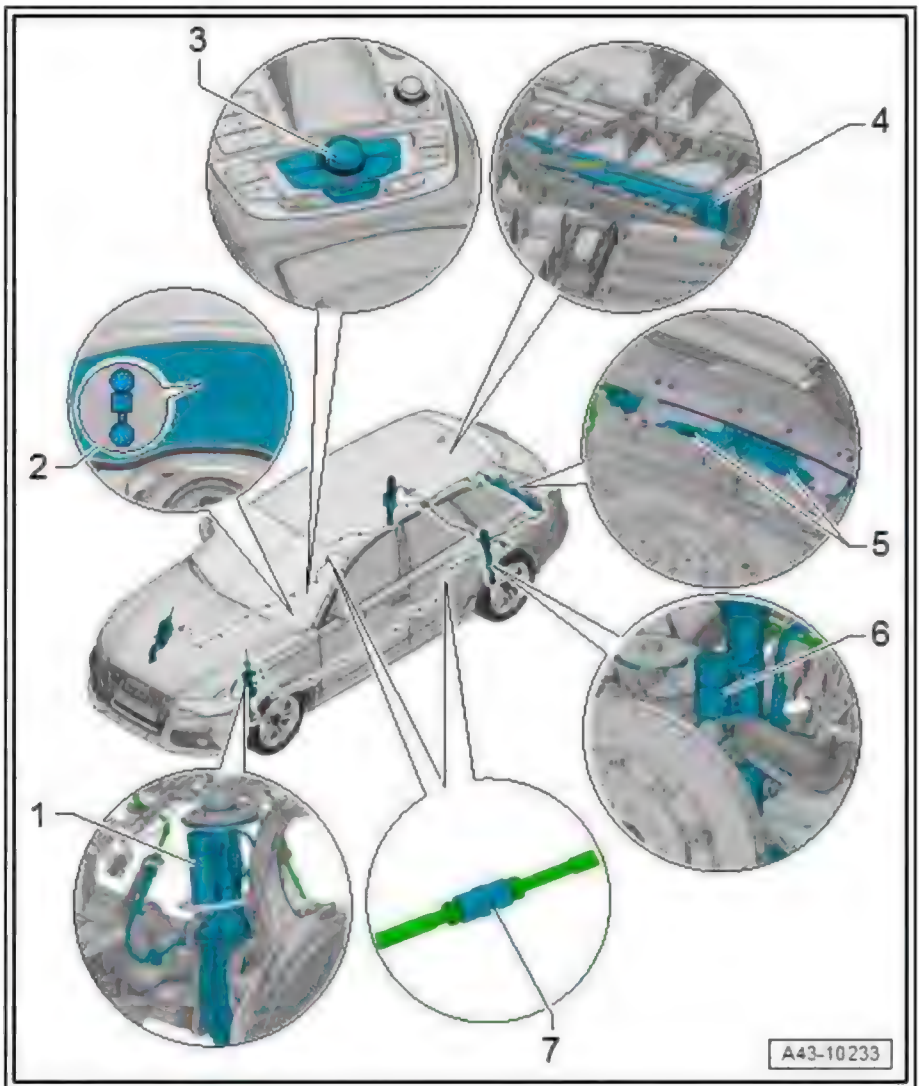
- ☐ Removing and installing  
⇒ [page 315](#)
- ☐ The DRC system comprises two separate hydraulic systems. The central valves are connected diagonally in relation to the corresponding shock absorbers.

**6 - Rear shock absorber with drain/charge valve**  
⇒ [page 315](#)

- ☐ Additional element with integrated DC motor on vehicles with variable damping

**7 - Connecting piece to front suspension strut (right/left)**

- ☐ 14 Nm



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### 4.3 Exploded view - central valve

1 - Bolt

□ 20 Nm

2 - Bracket

3 - Central valve

□ The DRC system comprises two separate hydraulic systems. The central valves are connected diagonally in relation to the corresponding shock absorbers.

□ Removing and installing  
⇒ [page 315](#)

4 - DRC pipe to shock absorber (rear)

□ Green marking (left-side)

□ Blue marking (right-side)

□ 14 Nm

5 - DRC pipe to shock absorber (front)

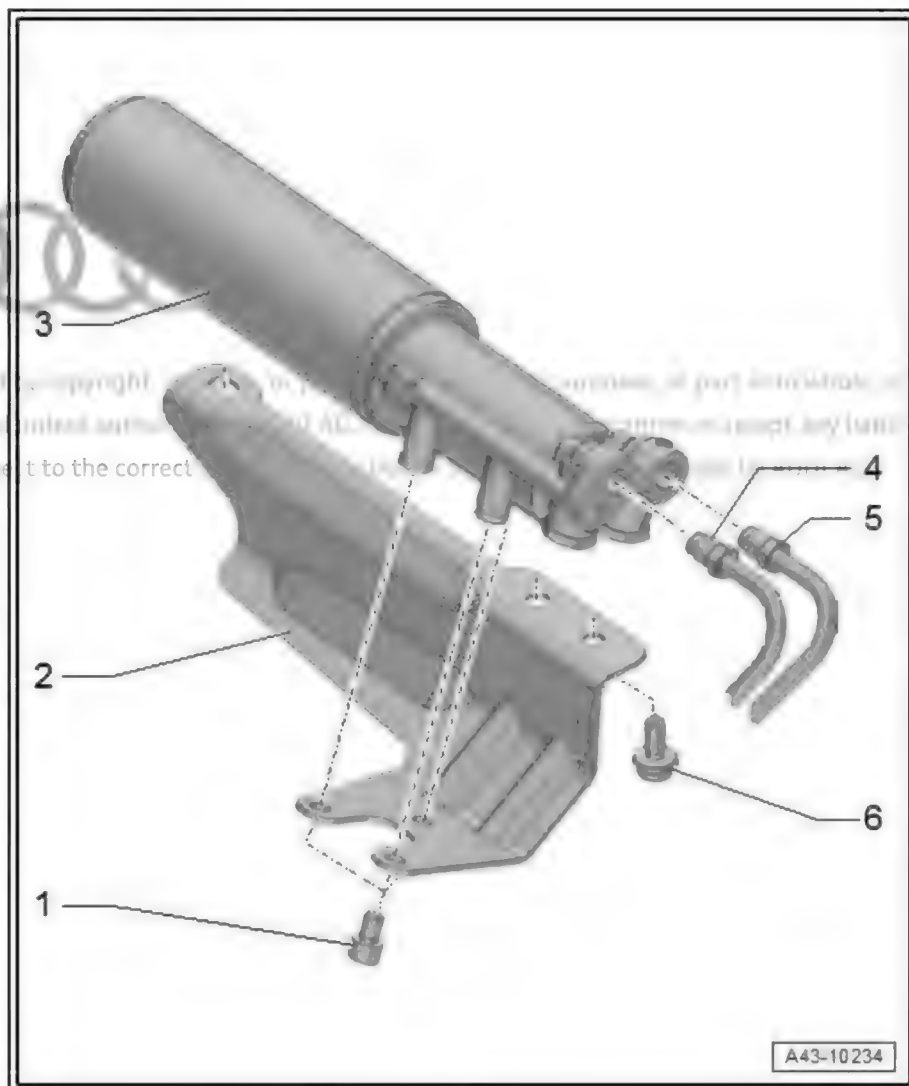
□ Yellow marking (left-side)

□ White marking (right-side)

□ 14 Nm

6 - Bolt

□ 20 Nm



#### Suspension strut (front)

1 - Drain/charge valve with hose; ensure strain-free installation

2 - Bracket

3 - Clip

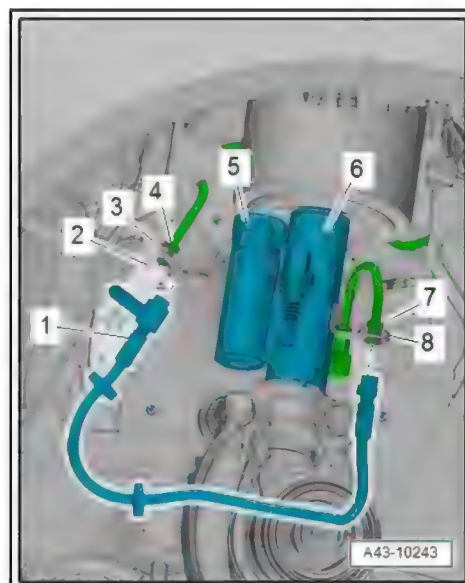
4 - Union nut, 14 Nm

5 - Additional element with control motor, fitted on vehicles with variable damping

6 - DRC shock absorber

7 - Union nut, 14 Nm

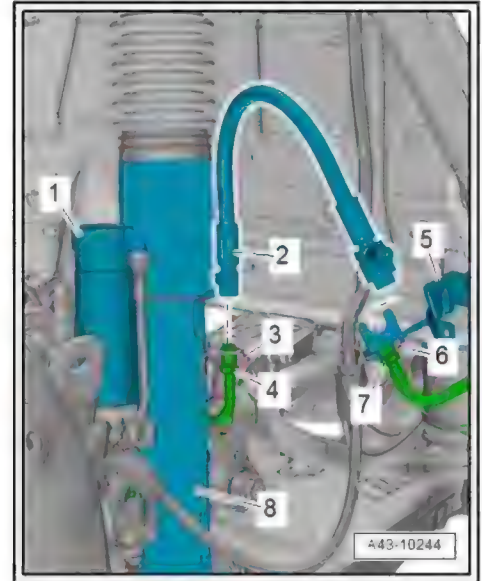
8 - Clip





#### Shock absorber (rear)

- 1 - Additional element with control motor, fitted on vehicles with variable damping
- 2 - Drain/charge valve with hose; ensure strain-free installation
- 3 - Clip
- 4 - Union nut, 14 Nm
- 5 - Bracket
- 6 - Clip
- 7 - Union nut, 14 Nm
- 8 - DRC shock absorber



## 4.4 Removing and installing central valve

### Removing

The central valves are bolted on the impact bar under the rear bumper cover.

- Remove bumper cover (rear) ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (rear); Removing and installing bumper cover



### CAUTION

Safety goggles must be worn for all procedures.



### Note

- ◆ *Before disconnecting the DRC pipes from the central valve, the relevant section of the system must be discharged ⇒ [page 318](#).*
- ◆ *This step must be repeated for both sets of pipes connected to the relevant central valve.*

- Unscrew union screws -2-.
- Remove bolts -1 and 3- and detach central valve -4-.

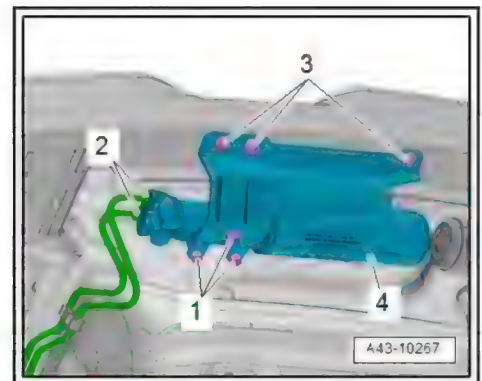
### Installing

- Installation is carried out in reverse sequence. Note the following:
- Connect DRC pipes to relevant central valve.

Fill DRC system ⇒ [page 318](#) .

### Tightening torques

- ◆ ⇒ ["4.3 Exploded view - central valve", page 314](#)



## 4.5 Removing and installing electronically controlled damping control unit - J250-

Replacement of the control unit does not require encoding and adaption. For this reason the "Replacement" function cannot be





performed in the "Guided Fault Finding" routine using the vehicle diagnostic tester .

The new electronically controlled damping control unit - J250- can be started up directly.

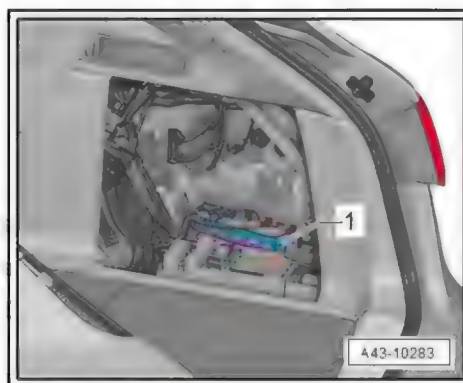


#### Note

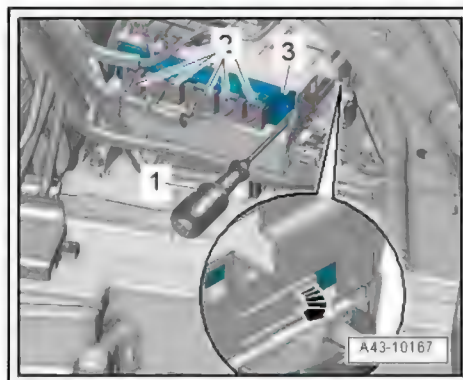
*Electronically controlled damping control unit - J250- is located behind side trim in luggage compartment (right-side)*

#### Removing

- Switch off ignition.
- Remove storage area in luggage compartment (right-side).
- Release relay and fuse holder and place to one side.



- Unplug electrical connectors -2-.
- Using a long screwdriver -1-, release catches on both sides -arrow- and detach adaptive suspension control unit - J197- -item 3-.



#### Installing

Installation is carried out in reverse sequence.

## 4.6 Checking DRC system

Start			
Rattling noise coming from suspension or rear of vehicle when driving over rough surfaces			Excessive body roll when entering a bend
→	Visible fluid leakage?		←
	↓	↓	
◆ Check components ◆ Check unions at central valves, shock absorbers and pipe connections ◆ Renew leaking shock absorbers	← Yes	No →	Check all unions at central valves, shock absorbers and pipe connections
↓			↓
↓	Problem eliminated?		
↓	↓	↓	
↓	No ↓	Yes ↓	



↓		Check system pressure in both sections of system. (Central valves must be closed when connecting and disconnecting pressure tester.)	↓
↓		↓	↓
↓		↓	↓
↓		Yes ↓	↓
Discharge, evacuate and charge entire DRC system using filling device for DRC system - VAS 6544- ; check for leakage ⇒ <a href="#">page 318</a> .		↓	↓
↓		↓	↓
	↓		↓
		↓	
		End	

## 4.7 Checking DRC system pressure

Special tools and workshop equipment required

◆ Pressure tester -V.A.S 6209/2-

◆ Hand vacuum pump - VAS 6213-

Bleeding pressure tester -V.A.S 6209/2-

Use only the approved type of fluid for this bleeding procedure.  
Please refer to ⇒ Electronic parts catalogue .



Note

- ◆ The pressure tester -V.A.S 6209/2- must always be bled before it is used for the first time.
- ◆ Bleeding is not required if the pressure tester -V.A.S 6209/2- still indicates a residual pressure in excess of 0.5 bar (e.g. from a previous measurement).

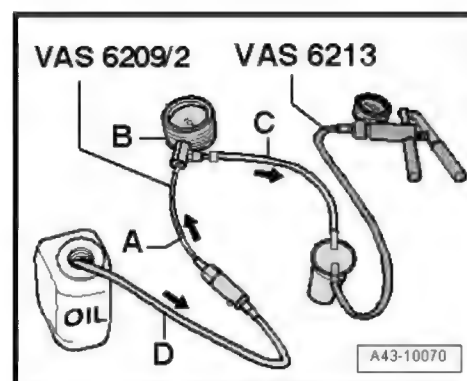
- Set up special tools as illustrated in order to bleed pressure gauge -B- and connecting line -A-.



Note

The illustration shows the bleeding method involving drawing in hydraulic fluid with hand vacuum pump - VAS 6213- .

- Continue bleeding until no more air bubbles are visible in hose -C-.
- Disconnect hoses -C- and -D- and perform system pressure test.







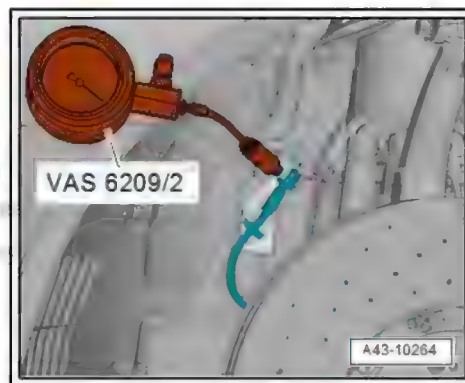
The system pressure test is carried out at the front shock absorber of the section of the DRC system that is to be tested.

- Unscrew dust cap from drain/charge valve and connect pressure tester -V.A.S 6209/2- .
- Read off system pressure at pressure tester -V.A.S 6209/2- .



#### Note

*The pressure at pressure tester -V.A.S 6209/2- only builds up gradually; the process takes approx. 2 minutes. Do not read off the DRC system pressure until the gauge needle of -V.A.S 6209/2- has finally come to rest.*



- Disconnect pressure tester -V.A.S 6209/2- and screw on dust cap.



#### Note

*When connecting and disconnecting pressure gauge -V.A.S 6209/2- , a small amount of fluid will always escape at the connection, but this is not critical. Repeated measurements should be avoided because the system loses a small amount of fluid every time the pressure tester -V.A.S 6209/2- is connected. The pressure reading will be about 0.3 bar lower than the previous value when the gauge is reconnected. Several repeated measurements will thus cause the pressure in the system to drop below the minimum limit, or can cause failure of the system.*

- If the pressure is not OK, trace the cause of the fault and repair the system.

#### DRC system pressure figures

These pressure figures are based on a reference temperature of 20 °C.

- ◆ 16 bar = Operating pressure
- ◆ 15 bar – 16 bar = Central valve new or in as-new condition
- ◆ 14 bar – 15 bar = Normal working range; system OK
- ◆ < 14 bar = System leaking or not fully charged; air trapped in system; central valve depressurised/empty.

## 4.8 Discharging and charging DRC system



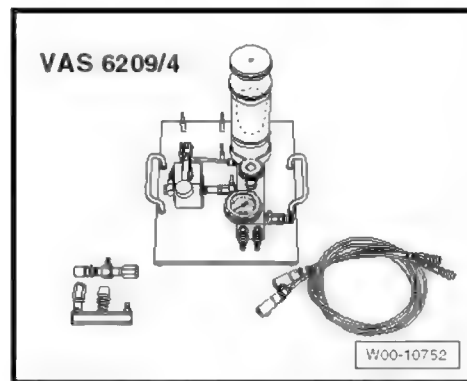
#### Note

*Discharging, evacuating and charging the complete DRC system (pipes/shock absorbers and central valve) is performed using the filling device for DRC system - VAS 6544- . Depending on the equipment available in your workshop for the DRC system, it may be necessary to modify/convert the existing equipment with the appropriate supplementary, upgrade or retrofit kits to meet the standard of the filling device for DRC system - VAS 6544- . The following equipment is available:*

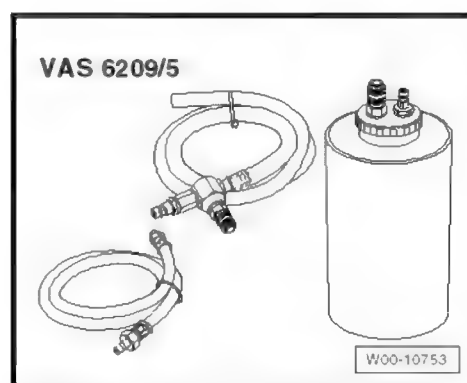
Special tools and workshop equipment required



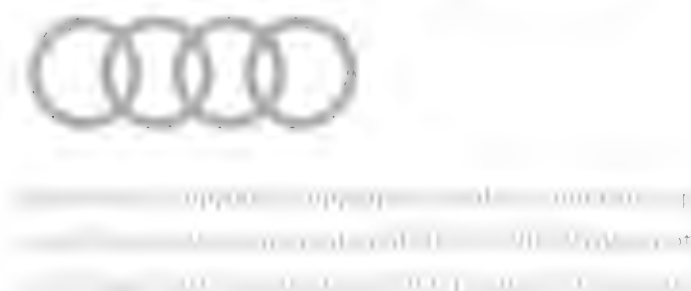
◆ Upgrade kit, filling device DRC system - VAS 6209/4-



- ◆ The upgrade kit, filling device DRC system - VAS 6209/4- is used as an upgrade kit for the charging device for Audi RS 6 DRC system - VAS 6209- already available in the workshop.
- ◆ Retrofit kit, filling device DRC system - VAS 6209/5-



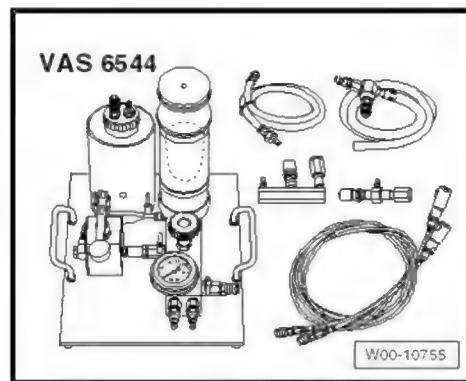
- ◆ The retrofit kit, filling device DRC system - VAS 6209/5- is required by workshops equipped with the central valve filler, Audi RS 4/RS 6 - VAS 6209/3- wishing to upgrade this to the technical standard of the filling device for DRC system - VAS 6544- . The supplementary kit, DRC system - VAS 6209/6- must also be obtained.
- ◆ Supplementary kit, filling device DRC system - VAS 6209/6-



- ◆ The supplementary kit, filling device DRC system - VAS 6209/6- is required to upgrade the existing central valve filler, Audi RS 4/RS 6 - VAS 6209/3- to the technical standard of the filling device for DRC system - VAS 6544- . As a basic requirement, the workshop must already be equipped with the charging device for Audi RS 6 DRC system - VAS 6209- . If the workshop is not equipped with the charging device for Audi RS 6 DRC system - VAS 6209- the retrofit kit, filling device DRC system - VAS 6209/5- must be obtained additionally.



◆ Filling device for DRC system - VAS 6544-



Note

*The equipment for the DRC system only needs to be modified once in your workshop. It is not necessary to convert the equipment back to its original condition. The further procedure for discharging and charging the entire DRC system is described for the filling device for DRC system - V.A.S 6544-.*

Use only the approved type of fluid when charging and topping up the system. Please refer to ⇒ Electronic parts catalogue .

Replacement shock absorbers and pipes are supplied empty.

Charging may only be performed at room temperature (approx. 20° Celsius).

Pipes/shock absorbers and central valves may only be discharged, evacuated and charged when they are installed in the vehicle and connected.



NOTICE

- ◆ The "COMFORT" damper setting must be activated when discharging, evacuating and charging the DRC system on vehicles with variable damping.
- ◆ To discharge, evacuate and charge the DRC system, select address word 14 in "Guided Functions" and start the function **Charge DRC** ⇒ Vehicle diagnostic tester.
- ◆ When this function is activated, the system switches to "COMFORT" mode and cannot be switched back manually. The yellow warning lamp in the instrument cluster lights up while the charging function is activated.

When charging the DRC system, the gas accumulator leading to the pressure chambers at the piston in the central valve is automatically checked for leaks.



CAUTION

Safety goggles must be worn for all procedures.

The valves on the workshop equipment are open when the cut-off lever is in line with the direction of flow.



Note

*The valves must be kept closed for transport and storage of the filling device for DRC system - VAS 6544-.*

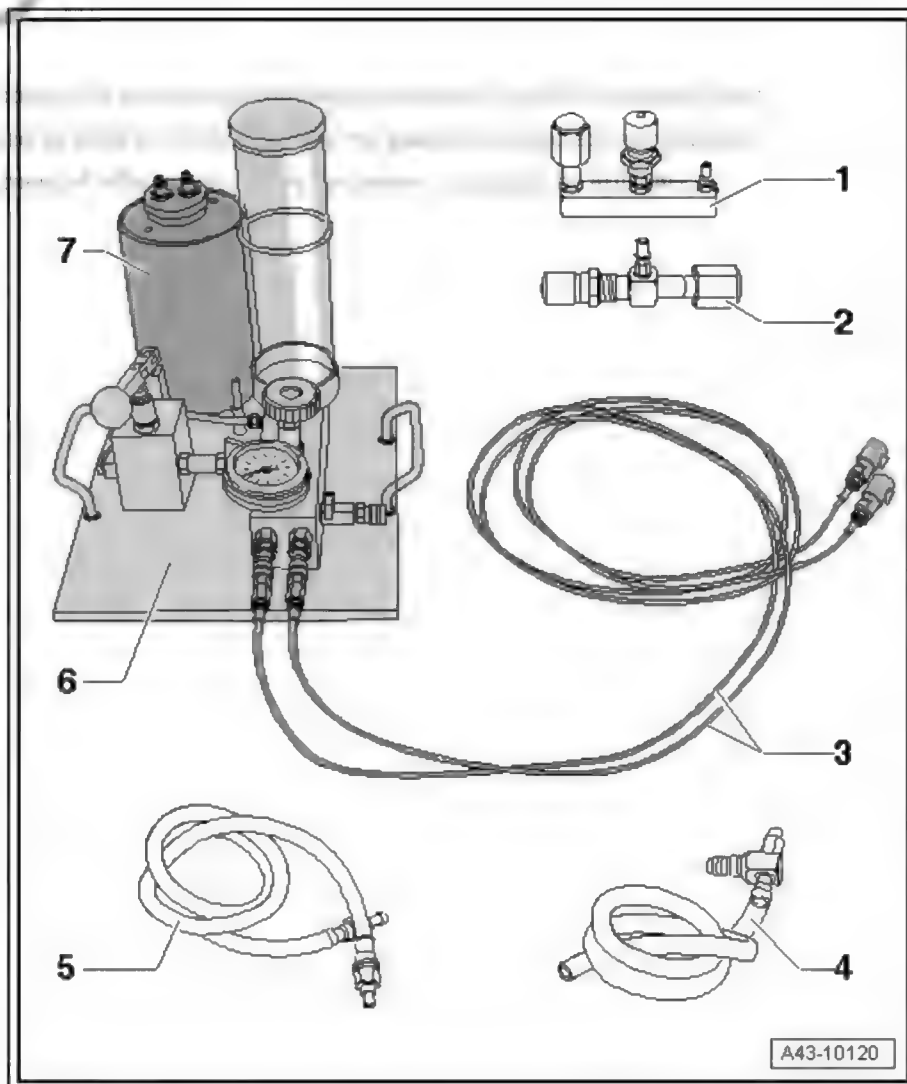




Pipes must not be bent.

Workshop equipment required

- 1 - Not required
- 2 - Not required
- 3 - Charging lines with quick-release couplings
- 4 - Venturi nozzle with air outlet hose
  - ☐ From charging device for Audi RS 6 DRC system - VAS 6209-
- 5 - Connecting hose
  - ☐ From charging device for Audi RS 6 DRC system - VAS 6209-
  - ☐ From charging device for Audi RS 6 DRC system - VAS 6544-
- 6 - Filling device for DRC system - VAS 6544-
- 7 - Used fluid container
  - ☐ Empty before starting work
  - ☐ Identified by red dot



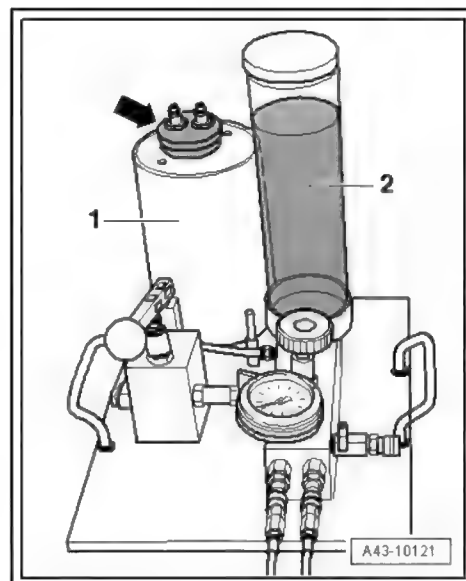
Note

- ◆ Before starting to charge the DRC system, it is important to ensure that the fluid container of the filling device for DRC system - VAS 6544- and the connecting line between the pressure pump and the fluid container are filled with fluid.
- ◆ The used fluid container of the filling device for DRC system - VAS 6544- must be empty and must be drained after each extraction.



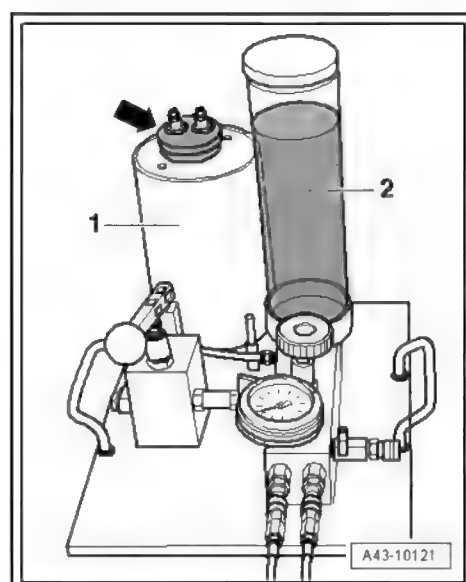
### Draining used fluid container

- Unscrew the cap -arrow- on the used fluid container -1- and dispose of the used fluid.
- Screw the cap -arrow- onto the used fluid container -1-.

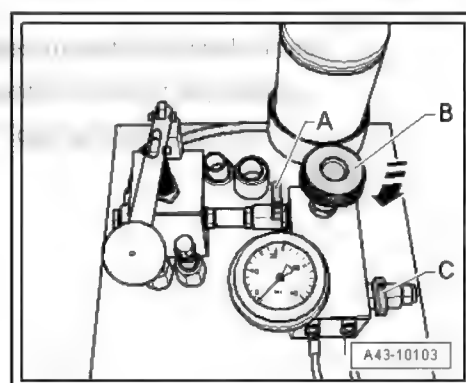


### Filling and bleeding filling device for DRC system - VAS 6544-

- Fill up fluid container -2- with fresh fluid as far as the mark and position O-ring in line with fluid level ⇒ Electronic parts catalogue .



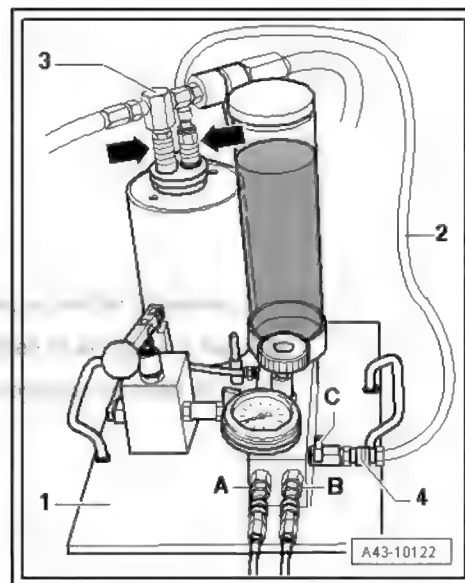
- Close shut-off valves -A- and -C- of filling device for DRC system -VAS 6544-.
- Close needle valve -B-.



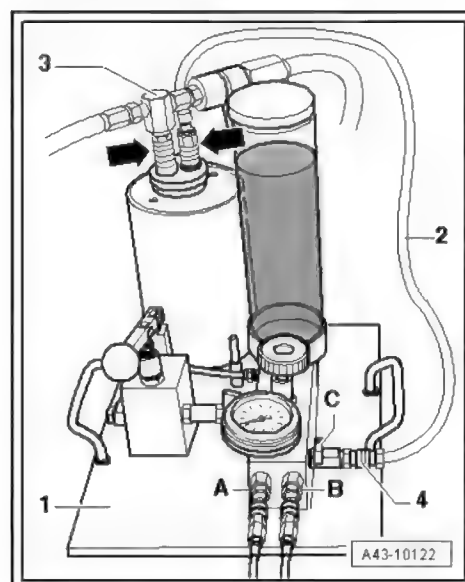




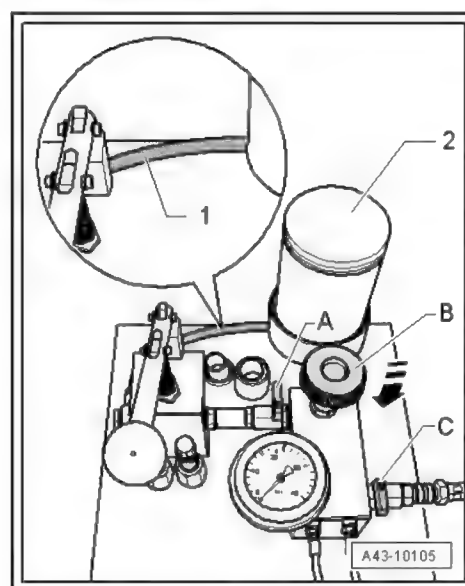
- Connect hose -2- to used fluid container -arrow- and quick-release coupling -4- of filling device for DRC system - VAS 6544- .



- Connect venturi nozzle -3- with air outlet hose to used fluid container -arrow- as shown in illustration.
- Connect compressed air line to venturi nozzle -3-.



- Open shut-off valve -C-.



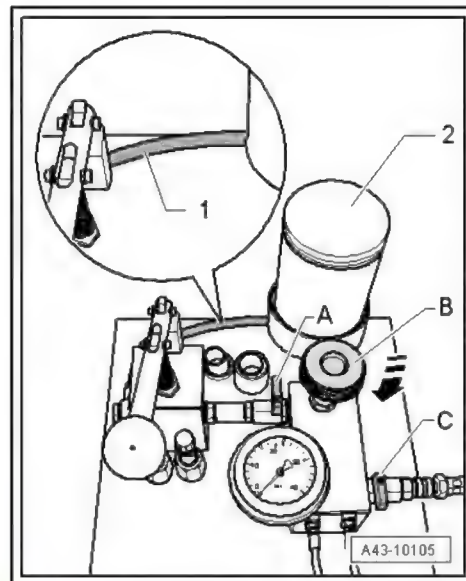


- Open shut-off valve -A- briefly (for about 1-2 seconds) until line -1- between fluid tank -2- and pressure pump is filled with bubble-free fluid.
- Close shut-off valve -C-. Disconnect compressed air line from venturi nozzle.

#### Discharging/evacuating



- ◆ The "COMFORT" damper setting must be activated when discharging, evacuating and charging the DRC system on vehicles with variable damping.
- ◆ To discharge, evacuate and charge the DRC system, select address word 14 in "Guided Functions" and start the function **Charge DRC** ⇒ Vehicle diagnostic tester.
- ◆ When this function is activated, the system switches to "COMFORT" mode and cannot be switched back manually. The yellow warning lamp in the instrument cluster lights up while the charging function is activated.



#### CAUTION

Safety goggles must be worn for all procedures.

- On vehicles with variable damping, select address word 14 in "Guided Functions" and start the function **Charge DRC** ⇒ Vehicle diagnostic tester.
- Turn the front wheel outwards on the side to be discharged.



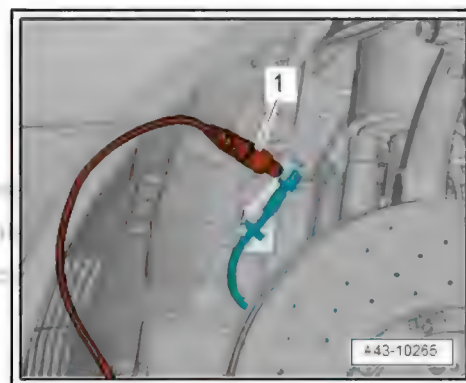
#### Note

*The DRC system comprises two separate hydraulic systems. The central valves are connected diagonally in relation to the corresponding shock absorbers.*

- Discharge DRC system as follows:

Central valve	Shock absorber
1 - left-side	Front left/rear right
2 - right-side	Front right/rear left

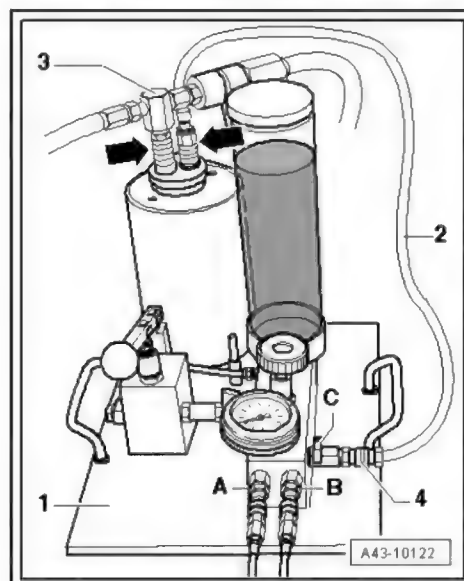
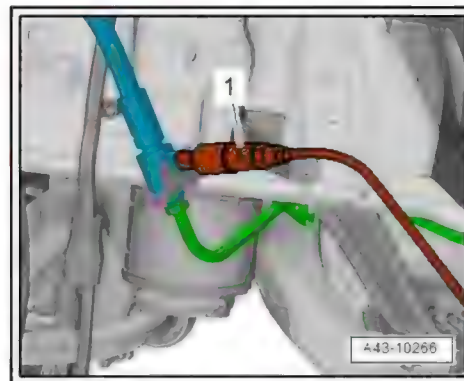
- Unscrew dust cap from drain/charge valve (front).
- Connect charging line with quick-release coupling -1- of filling device for DRC system - VAS 6544- ⇒ [Item 3 \(page 321\)](#) to drain/charge valve (front) on the pipe connection to be discharged.
- Remove the rear wheel on the side of the pipe connection to be discharged.
- Move clear wheel housing liner at drain/charge valve (rear).
- Unscrew dust cap from drain/charge valve (rear).





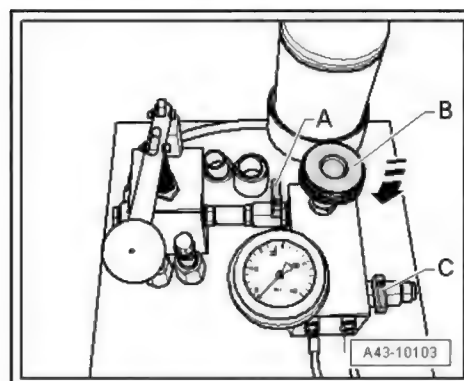


- Connect charging line with quick-release coupling -1- of filling device for DRC system - VAS 6544- ⇒ Item 3 (page 321) to drain/charge valve (rear) on the pipe connection to be discharged.
- Connect charging lines ⇒ Item 3 (page 321) to connections -A- and -B- of the filling device for DRC system - VAS 6544-.



Shut-off valves -A- and -C- of filling device for DRC system - VAS 6544- closed.

Needle valve -B- closed.



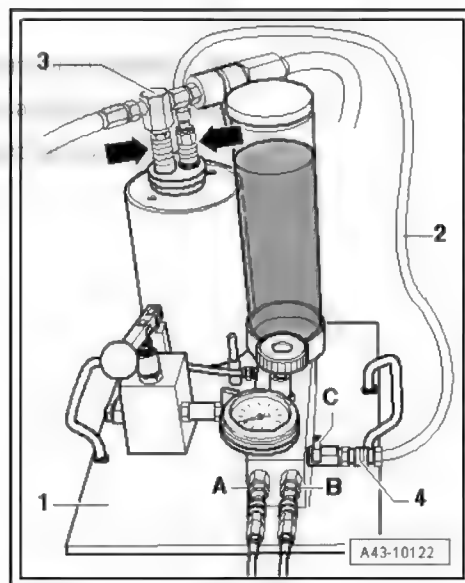
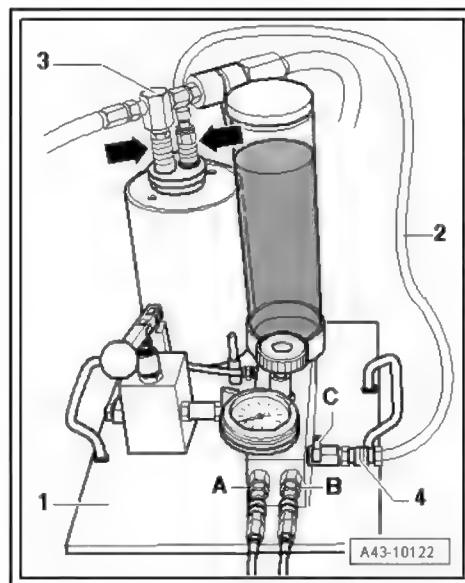
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Hose -2- connected to used fluid container -arrow- and to filling device for DRC system - VAS 6544- -4-.



Venturi nozzle -3- with air outlet hose connected to used fluid container -arrow- of filling device for DRC system - VAS 6544-  
Compressed air connected to venturi nozzle -3-.





- Open valve -C- until fluid is discharged from DRC system down to the smallest possible remainder. (This is visible at return hose -2- going to used fluid container).
- At a pressure gauge reading of approx. minus 0.9 bar, close valve -C- and disconnect compressed air line from venturi nozzle.
- Check for leakage.

**i** Note

*Vacuum must be maintained stable at minus 0.9 bar for at least 2 minutes.*

- Check fluid level in fluid container, fill up fluid container with fresh fluid as far as the mark (if necessary) and position O-ring in line with fluid level ⇒ Electronic parts catalogue .

**!** NOTICE

The “COMFORT” damper setting must be activated when discharging, evacuating and charging the DRC system on vehicles with variable damping.

### Charging

**i** Note

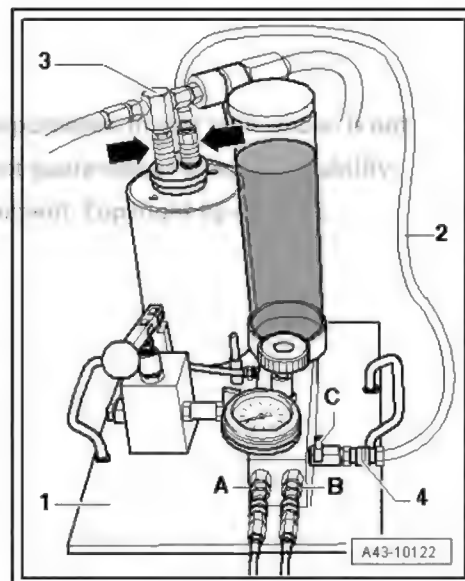
*The DRC system comprises two separate hydraulic systems. The central valves are connected diagonally in relation to the corresponding shock absorbers.*

- Charge DRC system as follows:

Central valve	Shock absorber
1 - left-side	Front left/rear right
2 - right-side	Front right/rear left

**!** NOTICE

- ◆ The “COMFORT” damper setting must be activated when discharging, evacuating and charging the DRC system on vehicles with variable damping.
- ◆ To discharge, evacuate and charge the DRC system, select address word 14 in “Guided Functions” and start the function **Charge DRC** ⇒ Vehicle diagnostic tester.
- ◆ When this function is activated, the system switches to “COMFORT” mode and cannot be switched back manually. The yellow warning lamp in the instrument cluster lights up while the charging function is activated.







- Open needle valve -B- about two turns, allowing fluid to be drawn out of fluid container of filling device for DRC system - VAS 6544- and into evacuated DRC system.

The fluid will flow out of the fluid container and into the connected DRC system. This can be seen from the dropping fluid level in the fluid container. This process may take several minutes, depending on the quantity of fluid remaining after discharging. The rate at which the fluid level drops decreases as system charging progresses. When the fluid level stops dropping, the first step in the charging process is complete.

- Close needle valve -B-.

- Open valve -A- and charge DRC system to 22 bar by repeatedly pumping lever of hand-operated pump -1-.



#### Note

*Make sure the fluid container of the filling device for DRC system - VAS 6544- does not run empty when charging. Top up the fluid container with fresh fluid if necessary.*

- When a pressure of 22 bar has been reached, close valve -A- and stop pumping lever of hand-operated pump.



#### Note

- ♦ *The quality of the filling process is not improved if the maximum pressure of 22 bar is exceeded. Caution: this can damage the DRC system components and filling device for DRC system - VAS 6544- !*
- ♦ *If the pressure of 22 bar cannot be reached, or if the pressure drops continuously, check all the separating couplings and connections for leaks and damage. If no irregularities are visible on the outside, the piston of the gas accumulator inside the central valve leading to the pressure chambers is leaking, so the central valve must be renewed.*

- Open needle valve -B- slightly and allow pressure to drop to 16 bar.
- When needle on pressure gauge reaches 16 bar mark, close valve -B-.

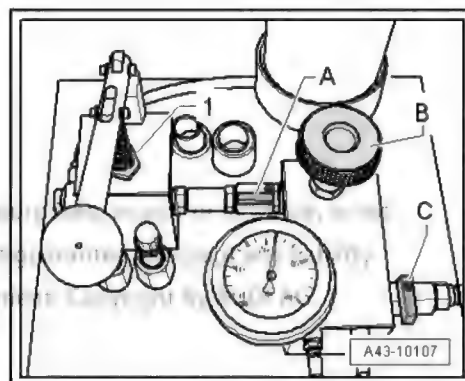
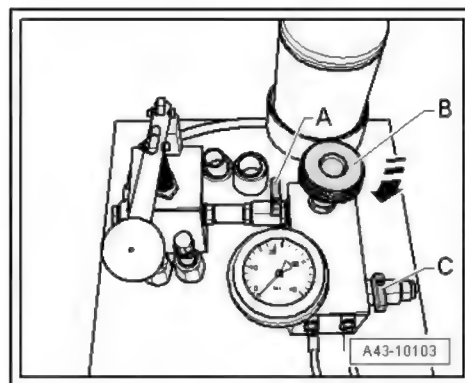


#### Note

*On some versions of the pressure gauge, the 16 bar graduation has a green marking. This marking is irrelevant to the application described here and must be ignored.*

DRC system is charged.

- Disconnect charging line with quick-release coupling of filling device for DRC system - VAS 6544- ➔ [Item 3 \(page 321\)](#) from drain/charge valves (front and rear).
- Fit rear wheel.
- Screw on dust cap for drain/charge valves (front and rear).
- On vehicles with variable damping, exit function **Charge DRC** on ➔ Vehicle diagnostic tester.







## 44 – Wheels, tyres, vehicle geometry

### 1 Wheels, tyres

This information is contained in the Workshop Manual on Wheels and tyres ⇒ Wheels and tyres; Rep. gr. 44 ; Fitting wheels / tyres / Tyre Pressure Monitoring System / Tyre Pressure Loss Indicator .





## 2 Wheel alignment

- ⇒ ["2.1 Notes on wheel alignment", page 330](#)
- ⇒ ["2.2 Test requirements", page 331](#)
- ⇒ ["2.3 Preparations for measurement", page 332](#)
- ⇒ ["2.4 Wheel alignment specifications", page 334](#)
- ⇒ ["2.5 Wheel alignment procedure", page 343](#)
- ⇒ ["2.6 When does wheel alignment have to be checked?", page 344](#)
- ⇒ ["2.7 Explanatory notes on production control numbers \(PR numbers\)", page 345](#)
- ⇒ ["2.8 Adjusting camber at front wheels", page 346](#)
- ⇒ ["2.9 Adjusting camber at rear wheels", page 349](#)
- ⇒ ["2.10 Adjusting toe setting at rear wheels", page 349](#)
- ⇒ ["2.11 Adjusting toe setting at front wheels", page 350](#)
- ⇒ ["2.12 Wheel runout compensation", page 350](#)
- ⇒ ["2.13 Checking full steering lock", page 350](#)
- ⇒ ["2.14 Checking reference position for wheel alignment \(vehicles with air suspension\)", page 351](#)

### 2.1 Notes on wheel alignment

Wheel alignment must always be performed using wheel alignment equipment approved by VW/Audi.

The alignment check must always include both the front and the rear axles.

This is important to achieve proper handling and road behaviour.



#### Note

- ◆ *To allow running gear to fully settle, wheel alignment should not be checked before the vehicle has completed 1000 to 2000 km.*
- ◆ *When making adjustments, try to obtain the specified settings as accurately as possible.*

Before checking the wheel alignment on vehicles with air suspension, the reference position/unladen position must be checked and, if necessary, re-adapted ⇒ [page 351](#) .



#### NOTICE

If adjustments are made to the suspension geometry, the steering angle sender - G85- must be calibrated on vehicles with ESP or ABS ⇒ Vehicle diagnostic tester.



**! CAUTION**

Risk of damage to running gear components.

Never place the vehicle on its wheels if the subframe mounting, steering rack or subframe cross brace is not correctly installed!

The vehicle must not be supported on the subframe or the subframe cross brace (e.g. using a trolley jack or similar)!

**! CAUTION**

All bolts and nuts must be fully tightened according to specifications before the vehicle is driven on public roads.

**! WARNING**

Risk of injury due to automatic engine start on vehicles with start/stop system.

- ◆ On vehicles with activated start/stop system (indicated by a message in the instrument cluster), the engine may start automatically if it needs to.
- ◆ Therefore it is important to ensure that the start/stop system is deactivated when performing repairs (switch off ignition, if required switch on ignition again).

## 2.2 Test requirements

Please refer to general information on wheel alignment

⇒ [page 330](#).

**Allow the vehicle to cool down.**

**Check suspension, steering and steering linkage for excessive play or damage and service if necessary.**

- Tread depth difference of no more than 2 mm on one axle.
- Tyres inflated to correct pressures.
- Vehicle accurately aligned, suspension bounced and rocked several times.
- Drive vehicle onto wheel alignment unit and ensure that suspension is not under stress, if necessary by moving vehicle backwards and forwards several times.
- Before starting the initial measurement and before making any adjustments, make sure that the steering is returned correctly to the centre position by turning the steering wheel uniformly in both directions using the steering wheel balance - VAS 6458-.
- Vehicle with coil springs in unladen condition. "Unladen" means: ready for the road (full tank, full windscreen washer/headlight washer fluid reservoir, spare wheel, vehicle tool kit and jack) but without driver.
- Vehicle with air suspension in reference position (i.e. at specified height with vehicle ready for the road but without driver ⇒ [page 351](#) ).
- Ensure that the sliding plates and turntables are not touching the end stop when checking the alignment.
- Sensors must be properly attached and adjusted; refer to operating instructions of equipment manufacturer.
- Perform compensation of wheel rim runout: A certain amount of axial runout at the wheel rims is permissible, but this may



already exceed the specified toe-in tolerance. In such cases it is not possible to set the toe-in correctly without first compensating for the wheel runout.

- Wheel alignment platforms and computer measuring equipment can lose their original levelling setting and calibration over a period of time, and they should therefore be serviced and calibrated at least once a year.
- Precision equipment should be treated with appropriate care.
- If necessary, contact the manufacturer for familiarisation with the proper use of the wheel alignment equipment.

## 2.3 Preparations for measurement

⇒ [“2.3.1 Preparations required before calibration/adjustment of driver assist systems”, page 332](#)

⇒ [“2.3.2 Preparations for measurement”, page 332](#)

### 2.3.1 Preparations required before calibration/adjustment of driver assist systems

The following steps are required if one or more driver assist systems on the vehicle are to be calibrated or adjusted via the “Quick-start” procedure (i.e. without first checking and adjusting the wheel alignment):

- Before driving the vehicle onto the alignment platform, make sure there is sufficient space between the vehicle and the setting device. The distance between the setting device and the vehicle must be  $120\text{ cm} \pm 2.5\text{ cm}$ .
- If the available space is not adequate, drive the vehicle backwards onto the alignment platform as required.
- Before commencing calibration/adjustment, interrogate event memory and rectify any faults.
- Vehicle accurately aligned, suspension bounced and rocked several times.
- Ensure that the sliding plates and turntables are not touching the end stop when checking the alignment.
- Activate Wheel change mode: see instructions in ⇒ Owner's Manual .
- Connect battery charger ⇒ Electrical system; Rep. gr. 27 ; Battery; Charging battery .
- Bring front wheels into straight-ahead position.
- Connect up vehicle diagnostic tester to vehicle and run diagnostic cable out through open window.
- Exterior lighting switched off.
- All vehicle doors closed.
- Press button to select required calibration/adjustment on wheel alignment computer.

### 2.3.2 Preparations for measurement

Special tools and workshop equipment required

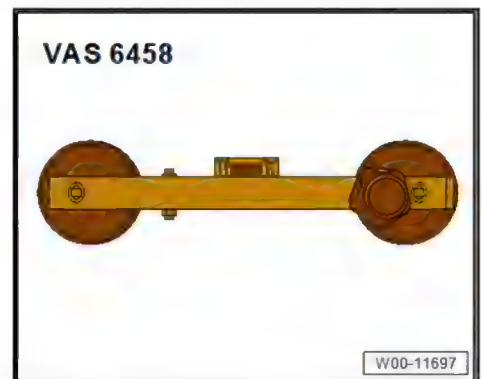




◆ Brake pedal actuator - V.A.G 1869/2-



◆ Steering wheel balance - VAS 6458-



- ◆ For vehicles with air suspension: vehicle diagnostic tester
- ◆ Wheel alignment computer approved by VW/Audi

Requirements

- Sensors must be properly attached and adjusted; refer to operating instructions of equipment manufacturer.
- Ensure that the sliding plates and turntables are not touching the end stop when checking the alignment.
- Drive vehicle onto wheel alignment unit and ensure that suspension is not under stress, if necessary by moving vehicle backwards and forwards several times.
- Before starting the initial measurement and before making any adjustments, make sure that the steering is returned correctly to the centre position by turning the steering wheel uniformly in both directions using the steering wheel balance - VAS 6458- .

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## 2.4 Wheel alignment specifications

⇒ ["2.4.1 Wheel alignment specifications, Sportback \(front axle\)", page 334](#)

⇒ ["2.4.2 Wheel alignment specifications, Sportback \(rear axle\)", page 335](#)

⇒ ["2.4.3 Wheel alignment specifications, Saloon/Avant \(front axle\)", page 336](#)

⇒ ["2.4.4 Wheel alignment specifications, saloon/Avant \(rear axle\)", page 339](#)

⇒ ["2.4.5 Calculating front camber setting on right-hand drive saloon/Avant vehicles", page 340](#)

⇒ ["2.4.6 Calculating front camber setting on right-hand drive Sportback vehicles", page 342](#)

### 2.4.1 Wheel alignment specifications, Sportback (front axle)



Note

*These specifications are applicable for all engines.*

	Front-wheel drive / four-wheel drive			
	Standard running gear 1BA	Heavy-duty running gear 1BB	Sports running gear 1BE/1BV	Air suspension, standard running gear 1BK
Distance between centre of wheel and bottom edge of wing	396 mm ± 10 mm	406 mm ± 10 mm	1BE: 386 mm ± 10 mm 1BV: 385 mm ± 10 mm	386 mm ± 10 mm
Camber <sup>1)</sup>	- 53' ± 23'	- 43' ± 23'	- 1° 5' ± 23'	- 1° 5' ± 23'
Maximum permissible difference between left and right	30'	30'	30'	30'
Toe setting for each wheel (specification when making adjustment)	+ 10 ± 5'	+ 10 ± 5'	+ 10 ± 5'	+ 10 ± 5'
Toe setting for each wheel (specification when checking adjustment)	+ 10 ± 7'	+ 10 ± 7'	+ 10 ± 7'	+ 10 ± 7'
Toe-out on turns at 20° <sup>2)</sup>	1° 49' ± 30'	1° 49' ± 30'	1° 49' ± 30'	1° 49' ± 30'
Outer wheel steering angle at full lock	33° 24' + 1° 30' - 2°	33° 24' + 1° 30' - 2°	33° 24' + 1° 30' - 2°	33° 24' + 1° 30' - 2°
Inner wheel steering angle at full lock	39° 36' + 1° 30' - 2°	39° 36' + 1° 30' - 2°	39° 36' + 1° 30' - 2°	39° 36' + 1° 30' - 2°

<sup>1)</sup> On right-hand drive vehicles, the camber setting must be calculated as a function of the distance between the centre of the wheel and the bottom edge of the wing ⇒ [page 342](#) .

<sup>2)</sup> The wheel on the outside of a curve is turned in less than the inside wheel. This value shows the difference in the steering angles. It may be displayed as a negative value on the wheel alignment computer, depending on the manufacturer.





	Front-wheel drive / four-wheel drive			
	Air suspension, heavy-duty running gear 1BS	Air suspension, RS running gear 2MA	Air suspension, sports running gear 2MB	RS running gear 2MC
Distance between centre of wheel and bottom edge of wing	391 mm ± 10 mm	386 mm ± 10 mm	386 mm ± 10 mm	391 mm ± 10 mm
Camber <sup>1)</sup>	- 59' ± 23'	-1° 8' ± 23'	-1° 5' ± 23'	-1° 2' ± 23'
Maximum permissible difference between left and right	30'	30'	30'	30'
Toe setting for each wheel (specification when making adjustment)	+ 10 ± 5'	+ 10 ± 5'	+ 10 ± 5'	+ 10 ± 5'
Toe setting for each wheel (specification when checking adjustment)	+ 10 ± 7'	+ 10 ± 7'	+ 10 ± 7'	+ 10 ± 7'
Toe-out on turns at 20° <sup>2)</sup>	1° 49' ± 30'	1° 49' ± 30'	1° 49' ± 30'	1° 49' ± 30'
Outer wheel steering angle at full lock	33° 24' + 1° 30' - 2°	33° 24' + 1° 30' - 2°	33° 24' + 1° 30' - 2°	33° 24' + 1° 30' - 2°
Inner wheel steering angle at full lock	39° 36' + 1° 30' - 2°	39° 36' + 1° 30' - 2°	39° 36' + 1° 30' - 2°	39° 36' + 1° 30' - 2°

1) On right-hand drive vehicles, the camber setting must be calculated as a function of the distance between the centre of the wheel and the bottom edge of the wing ⇒ [page 342](#) .

2) The wheel on the outside of a curve is turned in less than the inside wheel. This value shows the difference in the steering angles. It may be displayed as a negative value on the wheel alignment computer, depending on the manufacturer.

Additional data for vehicles with front-wheel drive and four-wheel drive:

The additional data listed here are intended only to facilitate diagnosis after an accident.

Table ⇒ [page 20](#)

## 2.4.2 Wheel alignment specifications, Sportback (rear axle)



Note

*These specifications are applicable for all engines.*

	Front-wheel drive / four-wheel drive			
	Suspension with steel springs (all running gear versions)	Air suspension (all running gear versions)		
Camber	- 1°20' ± 25'	- 1°20' ± 25'		





	Front-wheel drive / four-wheel drive			
	Suspension with steel springs (all running gear versions)	Air suspension (all running gear versions)		
Maximum permissible difference between left and right	30'	30'		
Toe setting for each wheel	+ 10 ± 5'	+ 10 ± 5'		
Total toe	+ 20 ± 10'	+ 20 ± 10'		
Maximum permissible deviation in direction of travel relative to longitudinal axis of vehicle	10'	10'		

Additional data for vehicles with front-wheel drive and four-wheel drive:

The additional data listed here are intended only to facilitate diagnosis after an accident.

Table → [page 20](#)

### 2.4.3 Wheel alignment specifications, Saloon/Avant (front axle)



Note

*These specifications are applicable for all engines.*

	Front-wheel drive / four-wheel drive			
	Standard running gear 1BA / 1BH	Heavy-duty running gear (China) 1BB	Sports running gear 1BE	hybrid 1BE
Distance between centre of wheel and bottom edge of wing	404 mm ± 10 mm	404 mm ± 10 mm	384 mm ± 10 mm	384 mm ± 10 mm
Camber <sup>1)</sup>	- 43' ± 23'	- 43' ± 23'	- 1° 5' ± 23'	- 1° 8' ± 23'
Maximum permissible difference between left and right	30'	30'	30'	30'
Toe setting for each wheel (specification when making adjustment)	+ 10 ± 5'	+ 10 ± 5'	+ 10 ± 5'	+ 10 ± 5'
Toe setting for each wheel (specification when checking adjustment)	+ 10 ± 7'	+ 10 ± 7'	+ 10 ± 7'	+ 10 ± 7'
Toe-out on turns at 20° <sup>2)</sup>	1° 49' ± 30'	1° 49' ± 30'	1° 49' ± 30'	1° 49' ± 30'
Outer wheel steering angle at full lock	33° 24' + 1° 30' - 2°	33° 24' + 1° 30' - 2°	33° 24' + 1° 30' - 2°	33° 24' + 1° 30' - 2°
Inner wheel steering angle at full lock	39° 36' + 1° 30' - 2°	39° 36' + 1° 30' - 2°	39° 36' + 1° 30' - 2°	39° 36' + 1° 30' - 2°





1) On right-hand drive vehicles, the camber setting must be calculated as a function of the distance between the centre of the wheel and the bottom edge of the wing ⇒ [page 340](#) .

2) The wheel on the outside of a curve is turned in less than the inside wheel. This value shows the difference in the steering angles. It may be displayed as a negative value on the wheel alignment computer, depending on the manufacturer.

	Front-wheel drive / four-wheel drive			
	Air suspension, standard running gear 1BK	Heavy-duty running gear 1BR	Air suspension, heavy-duty running gear 1BR (VW511CS China)	Air suspension, heavy-duty running gear 1BS
Distance between centre of wheel and bottom edge of wing	384 mm ± 10 mm	417 mm ± 10 mm	417 mm ± 10 mm	389 mm ± 10 mm
Camber <sup>1)</sup>	- 1° 5' ± 23'	- 30' ± 23'	- 34' ± 23'	- 59' ± 23'
Maximum permissible difference between left and right	30'	30'	30'	30'
Toe setting for each wheel (specification when making adjustment)	+ 10 ± 5'	+ 10 ± 5'	+ 10 ± 5'	+ 10 ± 5'
Toe setting for each wheel (specification when checking adjustment)	+ 10 ± 7'	+ 10 ± 7'	+ 10 ± 7'	
Toe-out on turns at 20° <sup>2)</sup>	1° 49' ± 30'	1° 49' ± 30'	1° 49' ± 30'	1° 49' ± 30'
Outer wheel steering angle at full lock	33° 24' + 1° 30' - 2°	33° 24' + 1° 30' - 2°	33° 24' + 1° 30' - 2°	33° 24' + 1° 30' - 2°
Inner wheel steering angle at full lock	39° 36' + 1° 30' - 2°	39° 36' + 1° 30' - 2°	39° 36' + 1° 30' - 2°	39° 36' + 1° 30' - 2°

1) On right-hand drive vehicles, the camber setting must be calculated as a function of the distance between the centre of the wheel and the bottom edge of the wing ⇒ [page 340](#) .

2) The wheel on the outside of a curve is turned in less than the inside wheel. This value shows the difference in the steering angles. It may be displayed as a negative value on the wheel alignment computer, depending on the manufacturer.

	Front-wheel drive / four-wheel drive			
	Air suspension, heavy-duty running gear (China) 1BS	Sports running gear (S line) 1BV	Air suspension, allroad 1BY	Air suspension, RS running gear 2MA
Distance between centre of wheel and bottom edge of wing	389 mm ± 10 mm	374 mm ± 10 mm	393 mm ± 10 mm	384 mm ± 10 mm
Camber <sup>1)</sup>	- 1° 23' ± 23'	- 1° 20' ± 23'	- 57' ± 23'	- 1° 8' ± 23'
Max. permissible camber difference betw. right & left sides of vehicle	30'	30'	30'	30'





	Front-wheel drive / four-wheel drive			
	Air suspension, heavy-duty running gear (China) 1BS	Sports running gear (S line) 1BV	Air suspension, allroad 1BY	Air suspension, RS running gear 2MA
Toe setting for each wheel (specification when making adjustment)	+ 10 ± 5'	+ 10 ± 5'	+ 10 ± 5'	+ 10 ± 5'
Toe setting for each wheel (specification when checking adjustment)	+ 10 ± 7'	+ 10 ± 7'	+ 10 ± 7'	+ 10 ± 7'
Toe-out on turns at 20° 2)	1° 49' ± 30'	1° 49' ± 30'	1° 49' ± 30'	1° 49' ± 30'
Outer wheel steering angle at full lock	33° 24' + 1° 30' - 2°	33° 24' + 1° 30' - 2°	33° 24' + 1° 30' - 2°	33° 24' + 1° 30' - 2°
Inner wheel steering angle at full lock	39° 36' + 1° 30' - 2°	39° 36' + 1° 30' - 2°	39° 36' + 1° 30' - 2°	39° 36' + 1° 30' - 2°

1) On right-hand drive vehicles, the camber setting must be calculated as a function of the distance between the centre of the wheel and the bottom edge of the wing ➔ [page 340](#) .

2) The wheel on the outside of a curve is turned in less than the inside wheel. This value shows the difference in the steering angles. It may be displayed as a negative value on the wheel alignment computer, depending on the manufacturer.

Additional data for vehicles with front-wheel drive and four-wheel drive:

The additional data listed here are intended only to facilitate diagnosis after an accident.

Table ➔ [page 20](#)

	Front-wheel drive / four-wheel drive			
	Air suspension, sports running gear 2MB	RS running gear 2MC		
Distance between centre of wheel and bottom edge of wing	384 mm ± 10 mm	389 mm ± 10 mm		
Camber 1)	-1° 5' ± 23'	-1° 2' ± 23'		
Max. permissible camber difference betw. right & left sides of vehicle	30'	30'		
Toe setting for each wheel (specification when making adjustment)	+ 10 ± 5'	+ 10 ± 5'		
Toe setting for each wheel (specification when checking adjustment)	+ 10 ± 7'	+ 10 ± 7'		
Toe-out on turns at 20° 2)	1° 49' ± 30'	1° 49' ± 30'		





	Front-wheel drive / four-wheel drive			
	Air suspension, sports running gear 2MB	RS running gear 2MC		
Outer wheel steering angle at full lock	33° 24' + 1° 30' - 2°	33° 24' + 1° 30' - 2°		
Inner wheel steering angle at full lock	39° 36' + 1° 30' - 2°	39° 36' + 1° 30' - 2°		

1) On right-hand drive vehicles, the camber setting must be calculated as a function of the distance between the centre of the wheel and the bottom edge of the wing ➔ [page 340](#) .

2) The wheel on the outside of a curve is turned in less than the inside wheel. This value shows the difference in the steering angles. It may be displayed as a negative value on the wheel alignment computer, depending on the manufacturer.

## 2.4.4 Wheel alignment specifications, saloon/Avant (rear axle)



Note

*These specifications are applicable for all engines.*

	Front-wheel drive / four-wheel drive			
	Suspension with steel springs (all running gear versions)	Air suspension (all running gear versions)		
Camber	- 1°20' ± 25'	- 1°20' ± 25'		
Maximum permissible difference between left and right	30'	30'		
Toe setting for each wheel	+ 10 ± 5'	+ 10 ± 5'		
Total toe	+ 20 ± 10'	+ 20 ± 10'		
Maximum permissible deviation in direction of travel relative to longitudinal axis of vehicle	10'	10'		

Additional data for vehicles with front-wheel drive and four-wheel drive:

The additional data listed here are intended only to facilitate diagnosis after an accident.

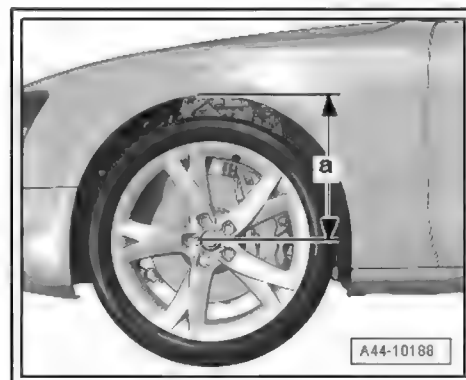
Table ➔ [page 20](#)



## 2.4.5 Calculating front camber setting on right-hand drive saloon/Avant vehicles

On right-hand drive Audi saloon/Avant vehicles, the camber setting at the front wheels must be calculated as a function of the distance between the centre of the wheel and the bottom edge of the wing.

- Measure distance -a- at both front wheels between centre of wheel and bottom edge of wing panel and note it down.
- Maximum permissible difference between distance on right and left  $\leq 10$  mm
- ◆ Running gear 1BA / 1BH / 1BB: specified distance 404 mm / specified camber  $-43'$
- ◆ Running gear 1BE: specified distance 384 mm / specified camber  $-1^{\circ}5'$
- ◆ Running gear 1BE hybrid: specified distance 384 mm / specified camber  $-1^{\circ}8'$
- ◆ Running gear 1BK: specified distance 384 mm / specified camber  $-1^{\circ}5'$
- ◆ Running gear 1BR: specified distance 417 mm / specified camber  $-30'$
- ◆ Running gear 1BR (VW511CS China): specified distance 417 mm / specified camber  $-34'$
- ◆ Running gear 1BS: specified distance 389 mm / specified camber  $-59'$
- ◆ Running gear 1BS (VW511CS China): specified distance 389 mm / specified camber  $-1^{\circ}3'$
- ◆ Running gear 1BV: specified distance 374 mm / specified camber  $-1^{\circ}20'$
- ◆ Running gear 1BY: specified distance 393 mm / specified camber  $-57'$
- ◆ Running gear 2MA: specified distance 384 mm / specified camber  $-1^{\circ}8'$
- ◆ Running gear 2MB: specified distance 384 mm / specified camber  $-1^{\circ}5'$
- ◆ Running gear 2MC: specified distance 389 mm / specified camber  $-1^{\circ}2'$



Example: calculating camber for running gear 1BA:

Camber = specified camber + [(measured distance -a- on left side + measured distance -a- on right side) ÷ 2 - specified distance]

Camber =  $-43'$  + [(measured distance -a- on left side + measured distance -a- on right side) ÷ 2 - 404 mm]



Note

$1'$  camber = 1 mm vehicle height





Example: the following table shows the front axle camber for running gear 1BA as a function of the mean distance -a- of the left and right sides.



Note

*Mean distance -a- of left and right side = (measured distance -a- on left side + measured distance -a- on right side) ÷ 2*

Front camber on right-hand drive saloon/Avant vehicles with running gear 1BA						
Distance between centre of wheel and bottom edge of wing			Camber			Maximum permissible difference between distance on right and left
Trend	Mean distance -a- of left and right side	Mean delta in rel. to specified distance in mm	Camber (value for checking/adjusting)	Tolerance	Max. permissible camber difference betw. right & left sides of vehicle	
Too high	414	10	-33'	± 23'	30'	≤ 10 mm
	413	9	-34'			
	412	8	-35'			
	411	7	-36'			
	410	6	-37'			
	409	5	-38'			
	408	4	-39'			
	407	3	-40'			
	406	2	-41'			
	405	1	-42'			
Spec.	404	0	-43'			
Too low	403	-1	-44'			
	402	-2	-45'			
	401	-3	-46'			
	400	-4	-47'			
	399	-5	-48'			
	398	-6	-49'			
	397	-7	-50'			
	396	-8	-51'			
	395	-9	-52'			
	394	-10	-53'			



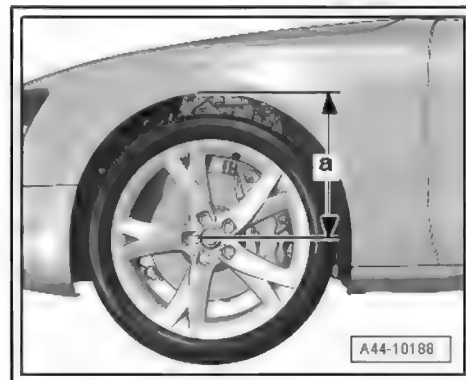




## 2.4.6 Calculating front camber setting on right-hand drive Sportback vehicles

On right-hand drive Audi Sportback vehicles, the camber setting at the front wheels must be calculated as a function of the distance between the centre of the wheel and the bottom edge of the wing.

- Measure distance -a- at both front wheels between centre of wheel and bottom edge of wing panel and note it down.
- Maximum permissible difference between distance on right and left ≤ 10 mm
- ◆ Running gear 1BA: specified distance 396 mm / specified camber -53'
- ◆ Running gear 1BB: specified distance 406 mm / specified camber -43'
- ◆ Running gear 1BE: specified distance 386 mm / specified camber -1°5'
- ◆ Running gear 1BV: specified distance 385 mm / specified camber -1°5'
- ◆ Running gear 1BK: specified distance 386 mm / specified camber -1°5'
- ◆ Running gear 1BS: specified distance 391 mm / specified camber -59'
- ◆ Running gear 1BY: specified distance 393 mm / specified camber -57'
- ◆ Running gear 2MA: specified distance 386 mm / specified camber -1°8'
- ◆ Running gear 2MB: specified distance 386 mm / specified camber -1°5'
- ◆ Running gear 2MC: specified distance 391 mm / specified camber -1°2'



Example: calculating camber for running gear 1BA:

Camber = specified camber + [(measured distance -a- on left side + measured distance -a- on right side) ÷ 2 - specified distance]

Camber = -53' + [(measured distance -a- on left side + measured distance -a- on right side) ÷ 2 - 396 mm]



### Note

1' camber = 1 mm vehicle height

Example: the following table shows the front axle camber for running gear 1BA as a function of the mean distance -a- of the left and right sides.



### Note

Mean distance -a- of left and right side = (measured distance -a- on left side + measured distance -a- on right side) ÷ 2

Front camber on right-hand drive Sportback vehicles with running gear 1BA		
Distance between centre of wheel and bottom edge of wing	Camber	Maximum permissible difference between dis-





Front camber on right-hand drive Sportback vehicles with running gear 1BA						
Trend	Mean distance -a- of left and right side	Mean delta in rel. to specified distance in mm	Camber (value for checking/adjusting)	Tolerance	Max. permissible camber difference betw. right & left sides of vehicle	tance on right and left
Too high	406	10	-43'	± 23'	30'	≤ 10 mm
	405	9	-44'			
	404	8	-45'			
	403	7	-46'			
	402	6	-47'			
	401	5	-48'			
	400	4	-49'			
	399	3	-50'			
	398	2	-51'			
	397	1	-52'			
Spec.	396	0	-53'			
Too low	395	-1	-54'			
	394	-2	-55'			
	393	-3	-56'			
	392	-4	-57'			
	391	-5	-58'			
	390	-6	-59'			
	389	-7	-60'			
	388	-8	-61'			
	387	-9	-62'			
	386	-10	-63'			

## 2.5 Wheel alignment procedure



### Note

- ◆ The vehicle must always be at the reference position/unladen position when measuring wheel alignment ⇒ [page 331](#) .
- ◆ Check which running gear version is fitted in vehicle. This information is listed on the vehicle data sticker ⇒ [page 345](#) .

Always keep to the following sequence of operations.

- 1 - Drive vehicle onto wheel alignment unit and ensure that suspension is not under stress, if necessary by moving vehicle backwards and forwards several times.
- 2 - Before starting the initial measurement and before making any adjustments, make sure that the steering is returned correctly to the centre position by turning the steering wheel uniformly in both directions using the steering wheel balance - VAS 6458- .
- 3 - Carry out wheel rim runout compensation ⇒ [page 350](#) .
- 4 - Check full steering lock ⇒ [page 350](#) .





- 5 - Check camber at rear wheels and adjust if necessary  
⇒ [page 349](#) .
- 6 - Check toe setting at rear wheels and adjust if necessary  
⇒ [page 349](#) .
- 7 - Check camber at front wheels and centralise if necessary  
⇒ [page 346](#) .
- 8 - Check toe setting at front wheels and adjust if necessary  
⇒ [page 350](#) .



#### Note

*If suspension settings have been changed, perform zero compensation of steering angle sender - G85- using ⇒ Vehicle diagnostic tester.*

If changes have been made to front and/or rear axle settings:

- Basic setting for dynamic steering must be performed for vehicles with dynamic steering ⇒ [page 355](#) .
- Adjust headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .

If the rear wheel alignment settings have been changed, the following tasks must be performed:

- On vehicles with ACC, sensors for adaptive cruise control must be adjusted ⇒ [page 358](#)
- On vehicles with lane departure warning system, lane departure warning function must be recalibrated ⇒ [page 365](#)
- On vehicles with night vision system, night vision system must be adjusted or calibrated ⇒ [page 371](#)
- On vehicles with reversing camera system, reversing camera system must be calibrated ⇒ Communication; Rep. gr. 91 ; Reversing camera system; Calibrating reversing camera system

## 2.6 When does wheel alignment have to be checked?

- ◆ In the event of handling problems
- ◆ Following accident damage
- ◆ If suspension components have been removed or renewed.
- ◆ If tyres are worn unevenly.

Front suspension component renewed:	Wheel alignment check required		Rear suspension component renewed:	Wheel alignment check required	
	Yes	No		Yes	No
Upper link (rear)		X	Shock absorbers		X
Upper link (front)		X	Upper transverse links	X	
Guide link (bottom)		X	Lower transverse links	X	
Track control link (bottom)		X	Bonded rubber bush		X
Swivel joint		X			
Air spring strut, coil spring/shock absorber		X	Air spring/coil spring		X
Shock absorber fork		X			
Wheel bearing housing		X	Wheel bearing housing	X	
Track rod	X		Track rod	X	





Front suspension component renewed:	Wheel alignment check required		Rear suspension component renewed:	Wheel alignment check required	
	Yes	No		Yes	No
Track rod ball joint	X				
Steering rack	X				
Subframe	X		Subframe	X <sup>1)</sup>	
Anti-roll bar		X	Anti-roll bar		X
Coupling rod		X	Coupling rod		X
<ul style="list-style-type: none"> <li><sup>1)</sup> A wheel alignment check may still be required, even if the position of the subframe has been fixed using locating pins - T40242- ➔ <a href="#">page 141</a> : perform a road test.</li> </ul>					

## 2.7 Explanatory notes on production control numbers (PR numbers)

The PR no. on the vehicle data sticker indicates the type of running gear (for front axle and rear axle) and which version of the Tyre Pressure Monitoring System / Tyre Pressure Loss Indicator is fitted in the vehicle.

The vehicle data sticker can be found in the spare wheel well and in the Service Schedule.

### Front axle/rear axle

The PR nos. for the front axle and rear axle are shown in the illustration: -A- and -B-.

- -A- indicates front axle PR no.
- -B- indicates rear axle PR no.

The PR numbers can be used to identify the correct shock absorber combination in the ➔ Electronic parts catalogue .

WAUZZZ4G2BN000691					
4GA 06Y		4172286			
A7 Sportb.	q.3.0	V6			
220 KW	A7S	04/10			
CGWB		---		---	
LX7W/LX7W		N5W / FZ			
E0A	7MG	4UE	6XE	5SL	5RU
2EA	J0P	1LL	1X1	1AT	1BK
3FE			5MA	8A3	
F0A		9G3	0G7	0YZ	0JZ
TC6	3NZ	8EX	U1A	X9X	QZ7
1XT		8Q4	9Q8	8Z5	D13
7T6	F27	7K6	4X3	2K1	
3L3	SOR	4KC	3Y0	4F2	5D7
1SA			Q1A	4GF	
	4.4	4.4	4.4	4.4	
A44-10249					





## Running gear versions

The PR no. for the different running gear versions is indicated by the -arrow- in the illustration.

In this example the vehicle is fitted with standard running gear, version 1BK.

1BA/1BH = Standard running gear

1BE = Sports running gear

1BB/1BR = Heavy-duty running gear

1BK = Standard running gear, air suspension

1BS = Heavy-duty running gear, air suspension

1BV = Sports running gear (S line)

1BY = allroad

2MA = RS running gear, air suspension

2MB = Sports running gear, air suspension

2MC = RS running gear

## Tyre Pressure Monitoring System/ Tyre Pressure Loss Indicator

The PR no. for the Tyre Pressure Monitoring System / Tyre Pressure Loss Indicator can be found in ELSA in the ➔ Vehicle-specific notes in the document "Vehicle data".

7K0 = Not equipped with Tyre Pressure Monitoring System

7K6 = Tyre Pressure Loss Indicator

7K8 = Tyre Pressure Monitoring System, frequency 315 MHz Basic

## Driver assist systems

The PR nos. for the driver assist systems can be found in ELSA in the ➔ Vehicle-specific notes in the document "Vehicle data".

1N7, 1N8 = Dynamic steering

7Y2 = Lane departure warning

7Y3 = Lane change assist plus lane departure warning

7Y4 = Lane departure warning (Heading Control Assist)

8T4 = Adaptive cruise control (ACC)

8T5 = Adaptive cruise control with additional features

9R1 = Night vision system



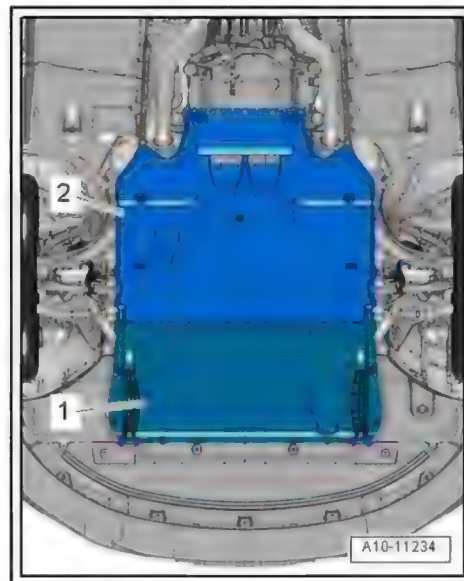
## 2.8 Adjusting camber at front wheels

The camber cannot be adjusted.

By moving the subframe, it is possible to centralise the camber setting symmetrically within the specified tolerance range.



- Remove noise insulation panels -1- and -2- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- If fitted, remove front longitudinal members (bottom) on both sides ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Exploded view - impact bar .
- Remove wheel spoilers (both sides) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front) .
- Detach inner sections of wheel housing liners on both sides and press outwards ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .
- Remove heat shield (top section) ⇒ [page 52](#) .

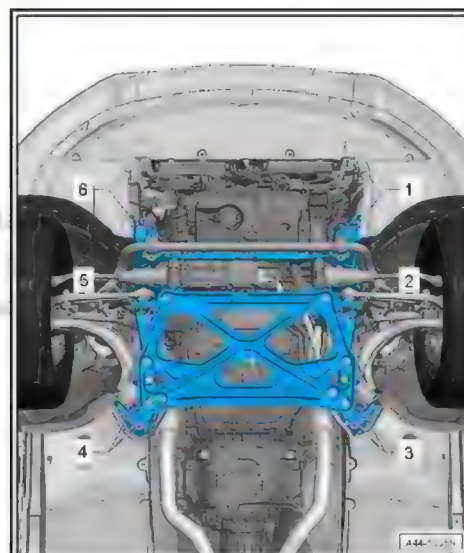


### ⚠ CAUTION

Accident risk if subframe is detached

- ◆ Do not unscrew subframe bolts completely!

- Slacken subframe bolts -1 to 6- (left and right) by two turns in several stages and in diagonal sequence.

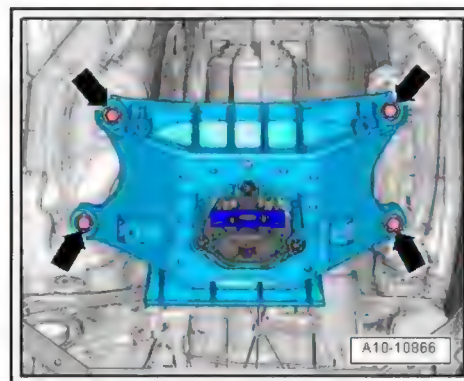


- Loosen bolts -arrows- securing tunnel cross member ⇒ Rep. gr. 34 ; Assembly mountings; Exploded view - assembly mountings or ⇒ Rep. gr. 37 ; Assembly mountings; Exploded view - assembly mountings .



### Note

*When moving the subframe (in order to centralise the camber setting), the vehicle must be raised at the front by positioning the axle lift under the jacking points for the lifting platform.*





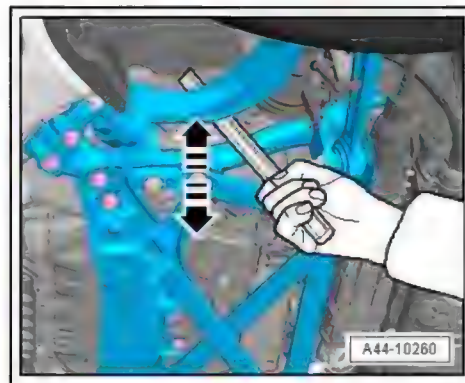
- Use plastic-coated tyre iron to move subframe (with engine mountings and anti-roll bar) to required position -arrows-.
- Position tool in centre of subframe near track control link and apply pressure between subframe and longitudinal member on body.

If no plastic-coated tyre iron is available, wrap adhesive tape around a conventional tyre iron.

- Before checking the camber values, the vehicle must be bounced several times at the front axle.

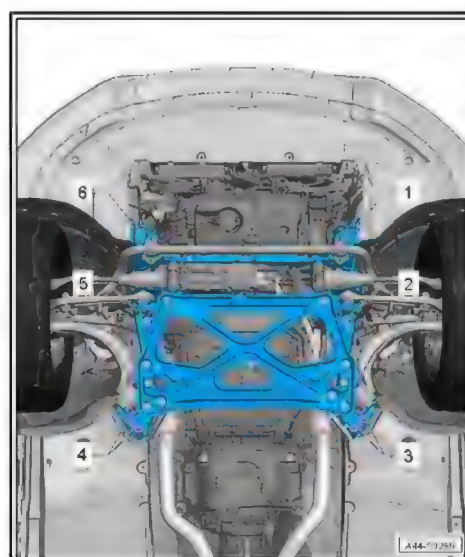
### ⚠ CAUTION

Take care not to damage any components.



Wheel alignment specifications ➔ [page 334](#)

- Remove subframe bolts one after the other and replace with new bolts.
- Initially tighten bolts -1 to 6- to specified torque only ➔ [page 28](#) .



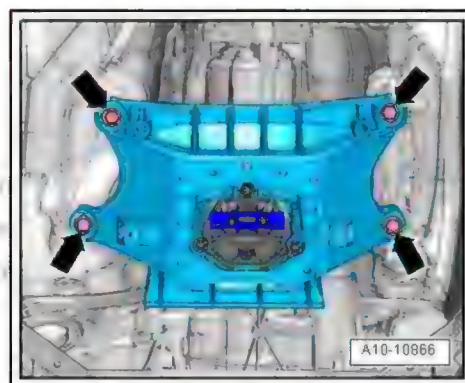
- Tighten bolts -arrows- securing tunnel cross member ➔ Rep. gr. 34 ; Assembly mountings; Exploded view - assembly mountings or ➔ Rep. gr. 37 ; Assembly mountings; Exploded view - assembly mountings .
- Check camber settings again ➔ [page 334](#) . If OK, tighten bolts for subframe by specified angle.

Please note:

All wheel alignment settings must be checked if camber setting has been altered.

Tightening torques

- ◆ ➔ ["2.1 Exploded view - subframe", page 28](#)
- ◆ ➔ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation



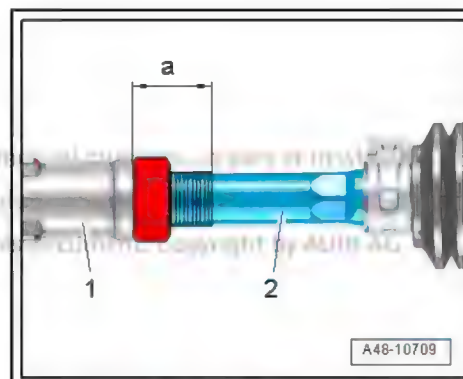






## 2.11 Adjusting toe setting at front wheels

- Measure and note down dimension -a- between track rod ball joint -1- and track rod -2- on both sides. Dimension -a- should be the same on the left and right prior to and after adjustment.



- Loosen lock nut -B-.



### Note

Counterhold track rod ball joint -C- when slackening or tightening lock nut -B-.

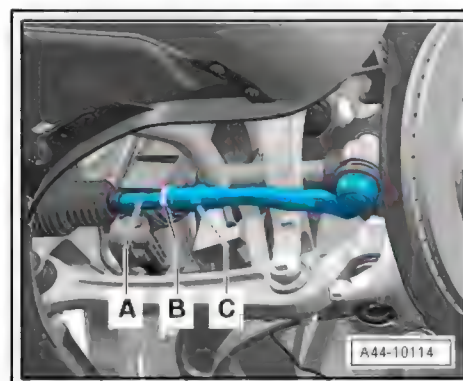
- Adjust toe setting at left and right wheels via hexagon flats -A-.

Make sure that rubber boot is not twisted after turning track rod.  
Twisted rubber boots wear out quickly.

- Tighten lock nut -B- ➔ [Item 11 \(page 405\)](#) and check toe-in value again.

The setting may change slightly after tightening lock nut -B-.

However, the adjustment is correct if the measured toe value is still inside the tolerance.



## 2.12 Wheel runout compensation

The toe-in cannot be set correctly without performing wheel runout compensation.

The existing lateral runout of the wheel rims must be compensated accordingly. Otherwise false results will be obtained.

A certain amount of axial runout at the wheel rims is permissible, but this may already exceed the specified toe-in tolerance. In such cases it is not possible to set the toe-in correctly without first compensating for the wheel runout.

Please observe the operating instructions provided by the manufacturer of the wheel alignment unit.

## 2.13 Checking full steering lock

The wheel alignment computer is used to determine the full steering lock.

- If the value was outside the tolerance when determining the full steering lock on the wheel alignment unit, inspect the steering and suspension for any damage or distortion and check the symmetry of the track rods. If necessary, shorten the "longer" track rod ball joint (by screwing it further onto the track rod) and renew any damaged components.
- If the steering wheel was found to be out of alignment when checking the centre position of the steering on the wheel alignment unit, inspect the steering and suspension for damage or



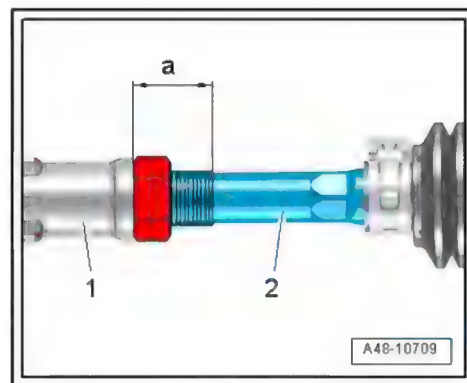


distortion and renew any damaged parts. Also check the symmetry of the track rods.

- Measure dimension -a- on “shorter” track rod ball joint. Shorten the “longer” track rod ball joint to the same dimension. To do so, screw track rod ball joint -1- further onto track rod -2-.

Dimension -a- on track rod ball joint (right-side) = dimension -a- on track rod ball joint (left-side); maximum permissible difference between right and left < 2.5 mm.

- When returning steering to centre position, allow steering wheel to “settle” by rocking it evenly back and forth past centre position a few times.



## 2.14 Checking reference position for wheel alignment (vehicles with air suspension)

Checking reference position for wheel alignment

Before checking the wheel alignment on vehicles with air suspension, the reference position/unladen position must be checked and, if necessary, re-adapted.

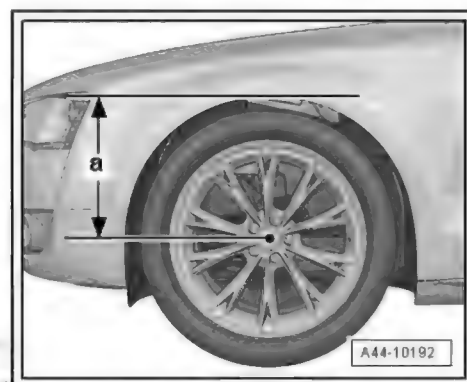
- To do this, run the »Wheel alignment« program on ⇒ Vehicle diagnostic tester in Guided Functions.

Determining height dimension -a-

Height dimension -a- is the value in mm between the centre of the wheel and the bottom edge of the wing/wheel housing.

- Determine dimension -a- between centre of wheel and bottom edge of wing/wheel housing, as shown in illustration.

Overview of height dimensions



**Sportback**

Running gear	Level setting	Distance between centre of wheel and bottom edge of wing/wheel housing				
		Front axle		Rear axle		Tolerance between left and right
		Nominal dimension	Tolerance	Nominal dimension	Tolerance	
Standard running gear 1BK	Normal	386 mm	± 10 mm	384 mm	± 10 mm	≤ 10 mm
RS running gear 2MA	Normal	386 mm	± 10 mm	384 mm	± 10 mm	≤ 10 mm
Sports running gear 2MB	Normal	386 mm	± 10 mm	384 mm	± 10 mm	≤ 10 mm
Heavy-duty running gear 1BS	Normal	391 mm	± 10 mm	389 mm	± 10 mm	≤ 10 mm





Saloon/Avant

Running gear	Level setting	Distance between centre of wheel and bottom edge of wing/wheel housing				
		Front axle		Rear axle		Tolerance between left and right
		Nominal dimension	Tolerance	Nominal dimension	Tolerance	
Standard running gear 1BK	Normal	384 mm	± 10 mm	382 mm	± 10 mm	≤ 10 mm
RS running gear 2MA	Normal	384 mm	± 10 mm	382 mm	± 10 mm	≤ 10 mm
Sports running gear 2MB	Normal	384 mm	± 10 mm	382 mm	± 10 mm	≤ 10 mm
Heavy-duty running gear 1BS	Normal	389 mm	± 10 mm	387 mm	± 10 mm	≤ 10 mm
allroad 1BY	Normal	393 mm	± 10 mm	390 mm	± 10 mm	≤ 10 mm





### 3 Dynamic steering

⇒ "3.1 Exploded view - dynamic steering", page 353

⇒ "3.2 Removing and installing active steering control unit J792", page 354

⇒ "3.3 Basic setting for dynamic steering", page 355

#### 3.1 Exploded view - dynamic steering



Note

◆ *Dynamic steering = active steering*

◆ *For more information on the dynamic steering system refer to ⇒ Self-study programme No. 402 ; Audi dynamic steering .*

The illustration below shows the arrangement of components -1- and -2- on a left-hand drive vehicle. The arrangement of components -1- and -2- on a right-hand drive vehicle is symmetrically opposite.

##### 1 - Active steering control unit - J792-

- ☐ Basic setting must be performed on the system if active steering control unit - J792- has been renewed  
⇒ [page 355](#) .
- ☐ Removing and installing  
⇒ [page 354](#)

##### 2 - Steering column

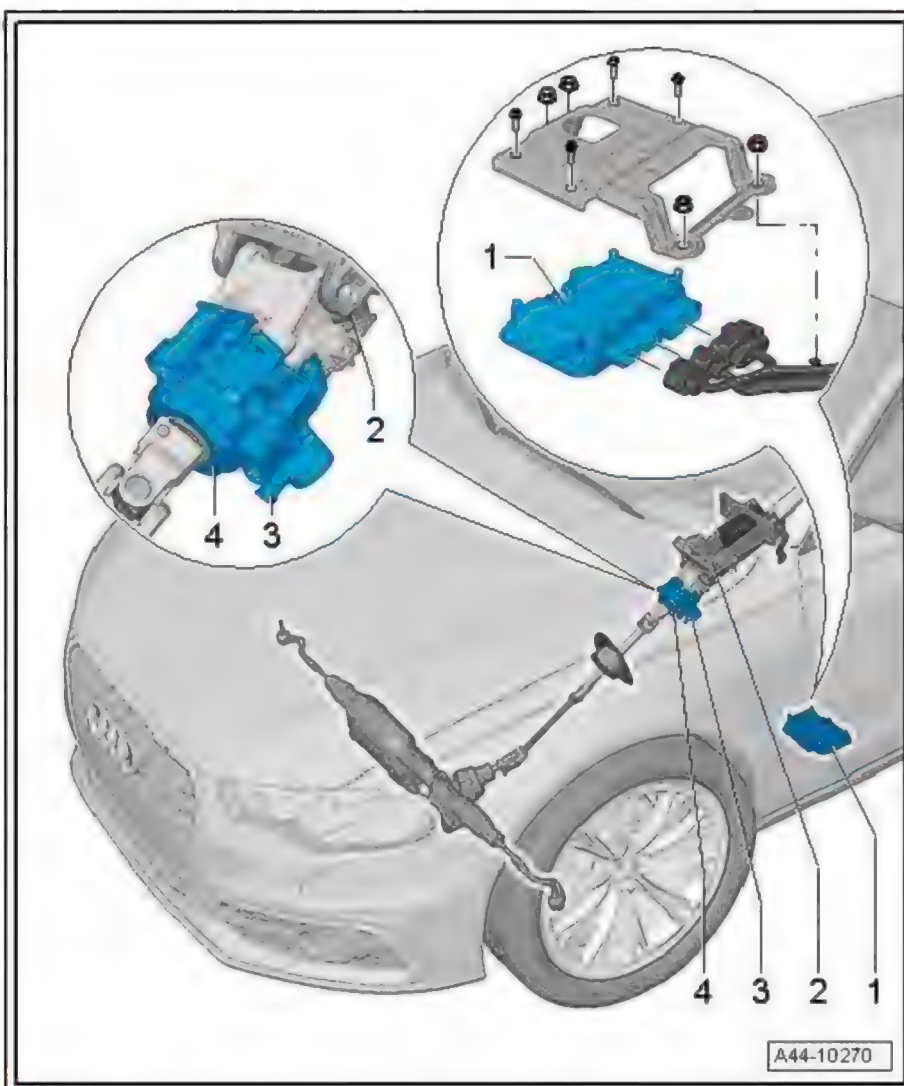
- ☐ Removing and installing  
⇒ [page 387](#)

##### 3 - Safety lock for active steering

- ☐ Removing and installing  
⇒ [page 392](#)

##### 4 - Adjuster

- ☐ Adjuster and steering column are combined as one component and renewed together
- ☐ Must not be detached or disconnected from steering column
- ☐ Basic setting of system must be performed if adjuster is renewed  
⇒ [page 355](#) .





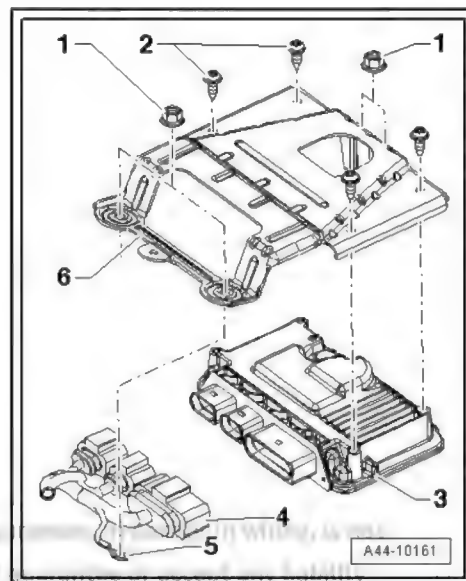
## 3.2 Removing and installing active steering control unit - J792-

Exploded view - active steering control unit - J792-

- 1 - Nut, 2.5 Nm
- 2 - Bolt, 8 Nm
- 3 - Active steering control unit - J792-
- 4 - Connector, with clip for wiring harness
- 5 - Earth wire
- 6 - Bracket



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Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1783-



- ◆ Vehicle diagnostic tester

### Removing

The active steering control unit - J792- is located in the footwell in front of the driver's seat.

- When renewing control unit, select "Replace" function for relevant control unit using ⇒ Vehicle diagnostic tester in Guided Functions mode.
- Unbolt driver's seat and move to rear with wiring connected ⇒ General body repairs, interior; Rep. gr. 72 ; Front seats; Removing and installing front seat .
- Remove floor mat.
- Remove sill panel trim ⇒ General body repairs, interior; Rep. gr. 70 ; Passenger compartment trim panels; Removing and installing sill panel trim .
- Remove foot rest ⇒ General body repairs, interior; Rep. gr. 70 ; Passenger compartment trim panels; Removing and installing foot rest .
- Unhook floor covering and press to one side.



- 
- Diagram of the aircraft A44-10219, showing numbered callouts 1 through 7 pointing to various components.

- 



3. Dynamic steering 355





#### ◆ Wheel alignment computer

There are two options for performing the basic setting on the dynamic steering system:

##### Quick-start

This procedure (basic setting only) should be selected if:

- ◆ The active steering control unit - J792- has been renewed.
- ◆ The steering angle sender - G85- has been calibrated.
- ◆ The steering column has been renewed.
- ◆ The steering wheel is not straight when driving in a straight line.

##### Full wheel alignment

This procedure (basic setting and wheel alignment) should be selected if:

- ◆ The front axle toe setting has been changed.
- ◆ The rear axle toe setting has been changed.
- ◆ If the running gear of the vehicle is modified in any way – e.g. conversion from standard running gear to sports running gear.



#### Note

- ◆ *The two procedures are programmed on the wheel alignment computer.*
- ◆ *Each procedure runs automatically.*
- ◆ *All you have to do is select the relevant program.*

Please note preparations required before calibration/adjustment of driver assist systems ⇒ [page 332](#) .

- Select basic setting for dynamic steering system on wheel alignment computer.
- Attach quick-release clamps to all four wheels.
- Attach wheel alignment sensors to front and rear wheels.
- Carry out wheel rim runout compensation ⇒ [page 350](#) .



#### Note

- ◆ *Disregard the steering wheel position!*
- ◆ *Only the display on the wheel alignment computer applies!*

"Quick-start" procedure:	"Full wheel alignment" procedure:
Drive vehicle onto test platform	Drive vehicle onto test platform
Activate measuring system	Activate measuring system
Select model	Select model
Carry out wheel rim runout compensation ⇒ <a href="#">page 350</a> .	Carry out wheel rim runout compensation ⇒ <a href="#">page 350</a> .
Wheel alignment computer indicates "Front wheels straight-ahead"	Perform initial wheel alignment ⇒ <a href="#">page 330</a>
Connect vehicle diagnostic tester	Align wheels ⇒ <a href="#">page 330</a>
Select function ⇒ <a href="#">page 357</a> .	Perform final wheel alignment
	Answer prompt: "Dynamic steering fitted?"





"Quick-start" procedure:	"Full wheel alignment" procedure:
	Wheel alignment computer indicates "Front wheels straight-ahead"
	Connect vehicle diagnostic tester
	Select function ➔ <a href="#">page 357</a> .

The remaining steps are now performed via the vehicle diagnostic tester .

#### VAS PC

Connect up ➔ Vehicle diagnostic tester.

- Select **Guided Functions** mode.
- Select address "1B - Active steering J792".
- Select "1B - Functions - Active steering J792".
- Select "1B - Basic setting" and follow instructions on screen.

#### ODIS - Offboard Diagnostic Information System

Connect up ➔ Vehicle diagnostic tester.

- Select **Diagnosis** mode and begin diagnosis.
- Select **Control units** tab.
- Select address "1B - Active steering J792".
- Select "1B - Functions - Active steering J792".
- Select "1B - Basic setting" and follow instructions on screen.

Then follow basic setting instructions on screen.



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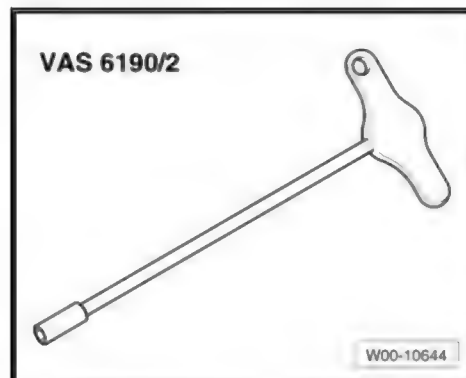
## 4 Adaptive cruise control

⇒ "4.1 Adjusting adaptive cruise control", page 358

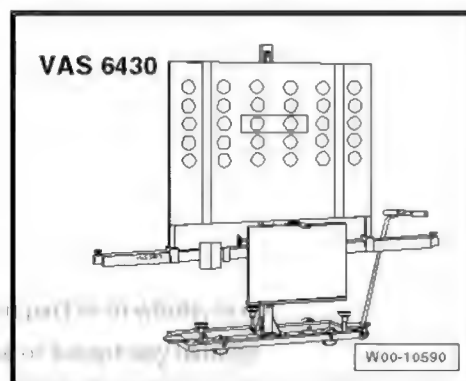
### 4.1 Adjusting adaptive cruise control

Special tools and workshop equipment required

- ◆ Adjusting tool - VAS 6190/2-



- ◆ ACC setting device - VAS 6430- or setting device, basic set - VAS 6430/1-



- ◆ ACC reflective mirror, Audi - VAS 6430/3-
- ◆ Vehicle diagnostic tester
- ◆ Wheel alignment computer

There are two options for adjusting the sensors for adaptive cruise control:

#### Quick-start

This procedure (adjustment only) should be selected in the following cases:

- ◆ If the adaptive cruise control unit - J428- and/or control unit 2 for adaptive cruise control - J850- have been removed and installed.
- ◆ If the front bumper has been removed and installed.
- ◆ If the front bumper has been detached or moved.
- ◆ If the front bumper is damaged.
- ◆ If the misalignment angle is greater than  $-0.8^\circ$  to  $+0.8^\circ$ .
- ◆ If there is excessive vertical misalignment of the sensors for adaptive cruise control .

#### Full wheel alignment

This procedure (adjustment and wheel alignment) should be selected in the following cases:





- ◆ If the rear axle toe setting has been changed.
- ◆ If the running gear of the vehicle is modified in any way – e.g. conversion from standard running gear to sports running gear.



#### Note

*The two procedures are programmed on the wheel alignment computer. Each procedure runs automatically. All you have to do is select the relevant program.*



#### Note

*Before performing ACC adjustment, check whether the vehicle is equipped with a night vision system. If so, it may be necessary to calibrate the camera for the night vision system first (depending on the repair work involved). The two adaptive cruise control sensors can be adjusted afterwards. Having set the distance between the camera for the night vision system and the calibration unit for night vision system - VAS 6430/6- , this setting can be used to perform the ACC adjustment.*

The steps listed under "Adjustment procedure (when wheel alignment has not been previously checked)" are only required if no wheel alignment check has already been performed.

Please note preparations required before calibration/adjustment of driver assist systems ⇒ [page 332](#) .

Adjustment procedure (when wheel alignment has not been previously checked)

- Attach quick-release clamps to rear wheels.
- Attach wheel alignment sensors to rear wheels.
- Carry out wheel rim runout compensation for rear wheels.
- Connect up vehicle diagnostic tester to vehicle and run diagnostic cable out through open window.

Adjustment procedure (when wheel alignment has been previously checked)

- Bring front wheels into straight-ahead position.

Adjustment procedure continued (irrespective of previous wheel alignment check)

- Connect battery charger ⇒ Electrical system; Rep. gr. 27 ; Battery; Charging battery .
- Close all vehicle doors.
- Press button to select ACC adjustment procedure in wheel alignment computer.

Always follow the adjustment procedure below:

- 1 - Set up equipment with ACC reflective mirror, Audi - VAS 6430/3- in centre position at a distance of 120 cm ± 2.5 cm from Audi rings.





#### Note

- ◆ *This step is necessary if you have not already adjusted/calibrated the camera for the night vision system.*
- ◆ *If the camera for the night vision system has already been adjusted/calibrated, it is not necessary to re-position the ACC setting device -VAS 6430-.*

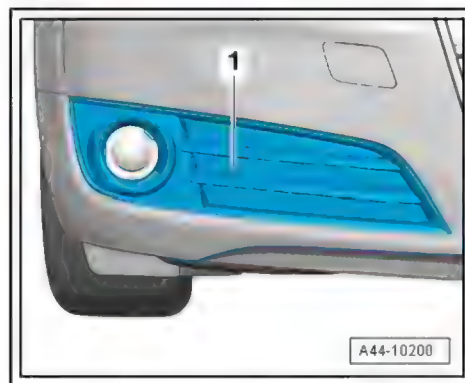
- 2 - Position ACC reflective mirror, Audi - VAS 6430/3- on right side in front of adaptive cruise control unit - J428- .
- 3 - Adjust adaptive cruise control unit - J428- .
- 4 - Attach ACC reflective mirror, Audi on opposite side of cross bar in front of control unit 2 for adaptive cruise control - J850- .
- 5 - Check position of spirit levels and cross bar (refer to display on wheel alignment computer) and correct if necessary.
- 6 - Adjust control unit 2 for adaptive cruise control - J850- .



#### Note

*Before performing ACC adjustment, check that the two sensors for adaptive cruise control and their brackets and fasteners are properly secured and inspect them for signs of impacts and/or extraneous damage. Service any damaged components as necessary. Similarly, check that the front bumper cover is securely attached and inspect for damage and cracks. Service any damaged components as necessary.*

- Detach air intake grille -1- (both sides) ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Removing and installing attachments .
- Remove any dirt from sensor lens.



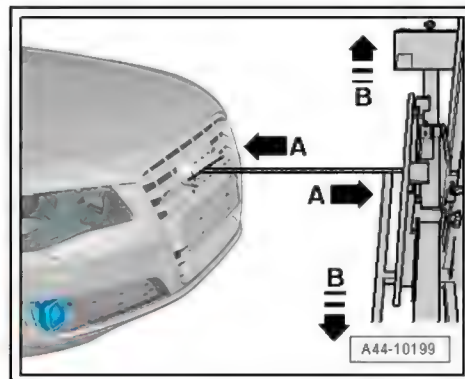
Procedure if camera for night vision system has not already been calibrated/adjusted

- Position ACC setting device - VAS 6430- so that distance -A- is attained between ACC reflective mirror, Audi - VAS 6430/3- (in centre position) and Audi rings.



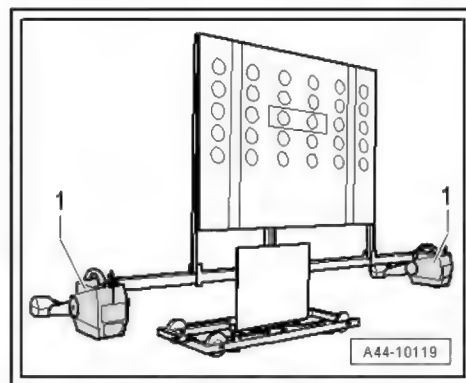
#### Note

- ◆ *Distance -A- = 120 cm ± 2.5 cm, measured from ACC reflective mirror, Audi - VAS 6430/3- to surface of Audi rings.*
- ◆ *Do not pull on the cross bar when moving -VAS 6430- .*



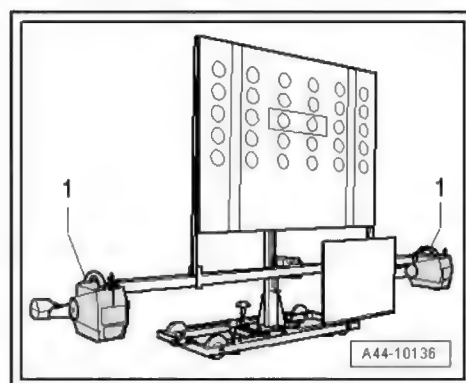


- Attach front wheel alignment sensors -1- to -VAS 6430- .

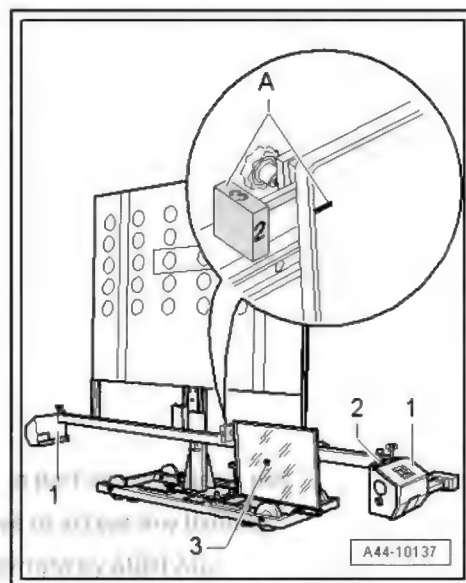


#### Procedure (all situations)

- Fit ACC reflective mirror, Audi on right side next to vertical slide, as shown in illustration.

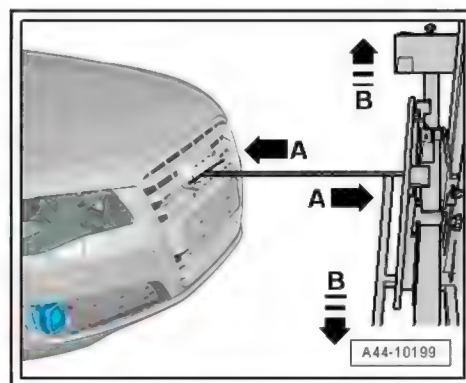


- In area -A-, align number -2- on rotary knob with mark on mirror (number 2 on rotary knob must face vehicle).



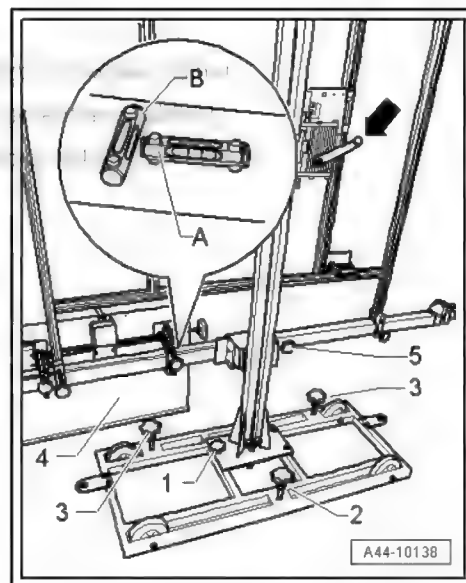
Prepared by: [illegible] Drawing for private commercial purposes. All rights reserved. All other trademarks and registered trademarks are the property of their respective owners. All other trademarks and registered trademarks are the property of their respective owners.

- Set up -VAS 6430- by moving it from side to side -arrows B-.

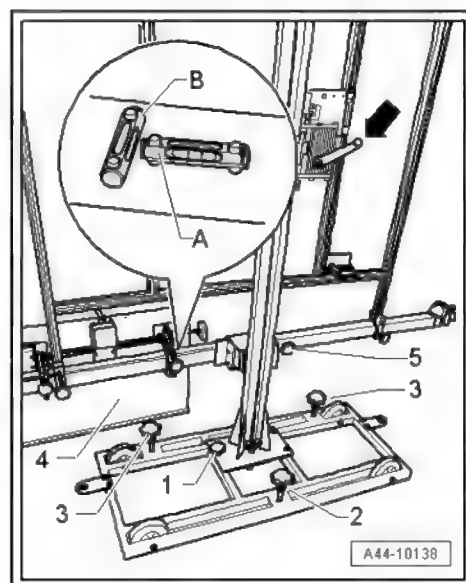




- Use adjusting screws -1-, -2- and -3- to bring spirit levels -A- and -B- on -VAS 6430- into horizontal position.



- Using crank handle -arrow- on -VAS 6430- , set mirror -4- so that laser beam coincides with centre of sensor lens in vertical plane. If necessary, re-position mirror -4- laterally on cross bar so that laser beam coincides with centre of sensor lens in horizontal plane.
- Set identical individual front axle toe values with fine adjustment screw -5-.
- Difference between individual toe values must be less than 6' or equal.





- Balance out spirit levels -2- on wheel alignment sensors -1-.
- Then check again that laser beam -3- from -VAS 6430- coincides with sensor lens.

**i** Note

- ◆ -VAS 6430- is correctly aligned if the laser beam still coincides with the sensor lens at this stage, after the identical toe values have been set.
- ◆ The alignment of -VAS 6430- must be repeated if the laser beam does not coincide with the sensor lens.

- Switch on vehicle diagnostic tester .

The vehicle diagnostic tester is ready for operation when the selector buttons for the operating modes appear on the screen.

- Switch on ignition.
- Touch the **Guided Fault Finding** button on the display screen.

- Select the following:

- ◆ Make
- ◆ Type
- ◆ Model year
- ◆ Version
- ◆ Engine code

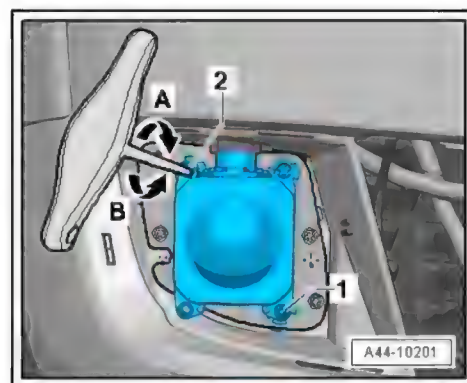
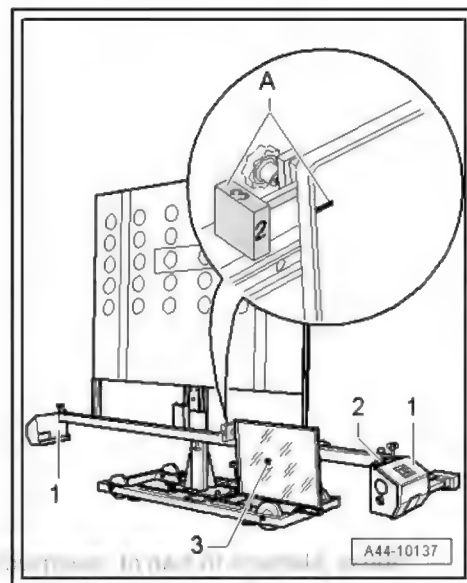
- Confirm the entered information.

Wait until diagnostic tester has interrogated all control units in the vehicle.

- Press the **Go to** button and select the option "Function/component selection".
- Select the relevant program in "Guided Functions".

Then follow adjustment instructions on screen.

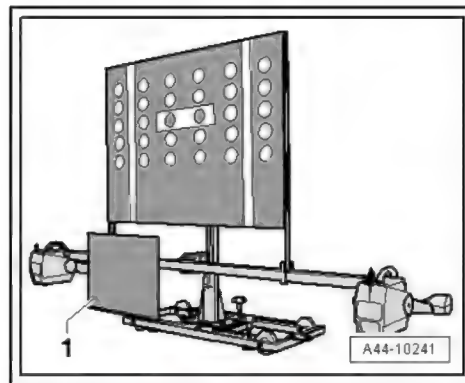
- For fine adjustment of adaptive cruise control unit - J428- in "Guided Functions", use screws -1- (bottom) and -2- (top).





When adjustment of adaptive cruise control unit - J428- has been successfully completed, perform adjustment of control unit 2 for adaptive cruise control - J850- .

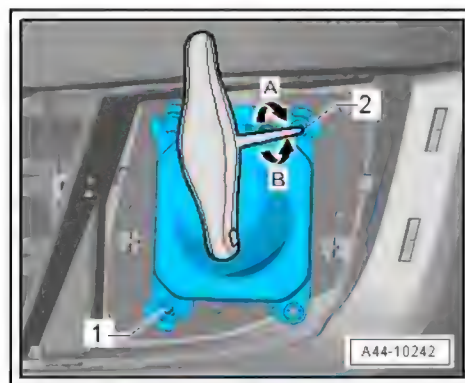
The procedures for adjusting control unit 2 for adaptive cruise control - J850- and adaptive cruise control unit - J428- are basically the same. ACC reflective mirror, Audi -1- has to be refitted on opposite side of cross bar ➔ [page 358](#) .



- For fine adjustment of control unit 2 for adaptive cruise control - J850- in "Guided Functions", use screws -1- (bottom) and -2- (top).

#### NOTICE

ACC adjustment is not completed until diagnostic tester displays "Final control element diagnosis ended".



- Switch off ignition.
- Detach connector of diagnosis cable at diagnostic connection.
- Disconnect battery charger ➔ Electrical system; Rep. gr. 27 ; Battery; Charging battery
- Install air intake grille ➔ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Removing and installing attachments .



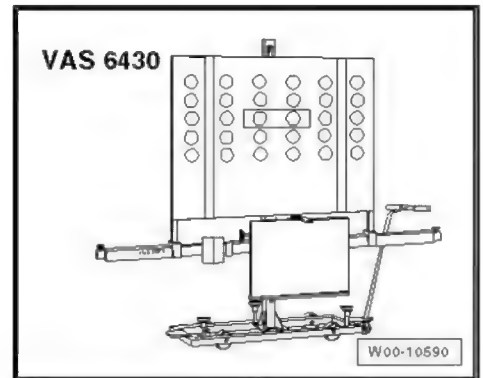
## 5 Front camera for driver assist systems

⇒ ["5.1 Calibrating front camera for driver assist systems", page 365](#)

### 5.1 Calibrating front camera for driver assist systems

Special tools and workshop equipment required

- ◆ ACC setting device - VAS 6430-



- ◆ Vehicle diagnostic tester
- ◆ Wheel alignment computer



Note

- ◆ Check that setting device - VAS 6430- is locked in centre position.
- ◆ Check that the camera control unit - J852- is seated correctly in the bracket.
- ◆ Check that the camera vision is unobstructed (visual inspection).
- ◆ Before commencing calibration, interrogate event memory and rectify any faults.

There are two options for performing the calibration:

#### Quick-start

This procedure (calibration only) should be selected if:

- ◆ The fault "No or incorrect basic setting / adaption" is registered in the event memory.
- ◆ The camera control unit - J852- is removed and installed or renewed.
- ◆ The windscreen is removed or renewed.
- ◆ The reference position has been re-adapted on vehicles with air suspension.

#### Full wheel alignment

This procedure (calibration and wheel alignment) should be selected if:

- ◆ The rear axle toe setting has been changed.
- ◆ The running gear of the vehicle is modified in any way – e.g. conversion from standard running gear to sports running gear.





# Note

*The two procedures are programmed on the wheel alignment computer. Each procedure runs automatically. All you have to do is select the relevant program.*

Please note preparations required before calibration/adjustment of driver assist systems ➔ [page 332](#) .

Calibration/adjustment procedure (when wheel alignment has not been previously checked)

- Attach quick-release clamps to all four wheels.
- Attach rear wheel alignment sensors.
- Carry out wheel rim runout compensation for rear wheels.

Calibration/adjustment procedure (when wheel alignment has been previously checked)

- Bring front wheels into straight-ahead position.

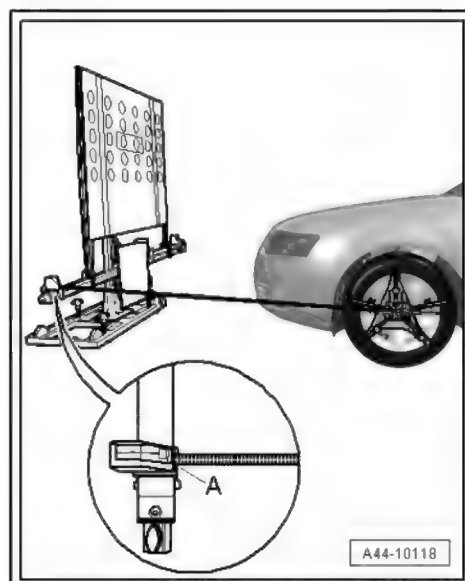
Calibration/adjustment procedure continued (irrespective of previous wheel alignment check)

- Press button to select calibration/adjustment procedure in wheel alignment computer.
- Set up -VAS 6430- as shown in illustration so that distance -A- measured from hub centres of front wheels to cross bar of -VAS 6430- is 150 cm  $\pm$  2.5 cm.



# Note

*Do not pull on the cross bar when moving -VAS 6430- .*

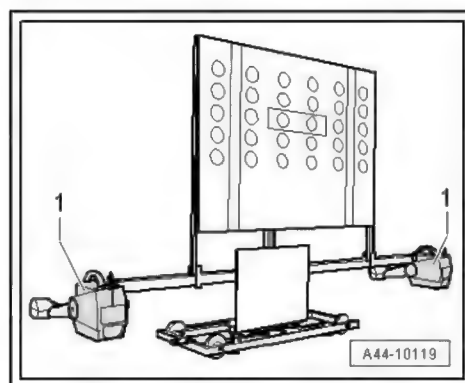


- Attach front wheel alignment sensors -1- to -VAS 6430- .



# Note

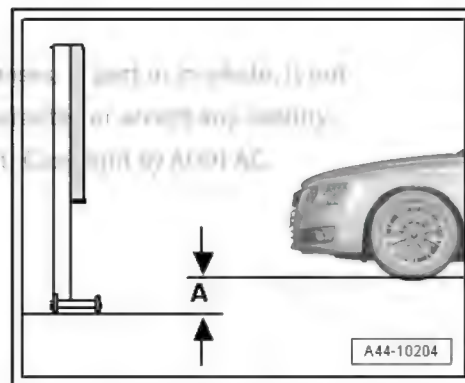
*For the next step the wheel alignment platform must be set at the lowest available position.*



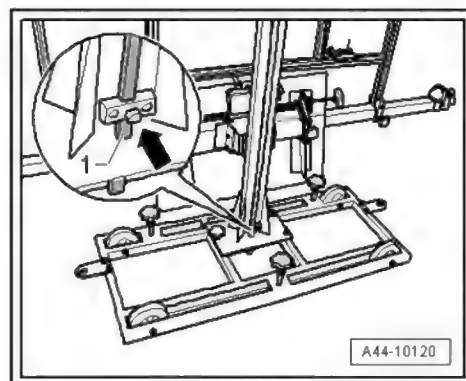




- Determine height difference -A- between floor level where -VAS 6430- is set up and wheel contact patch as shown in illustration and enter this value in the wheel alignment computer.



- Loosen bolt -arrow- and set measuring bar -1- on floor.



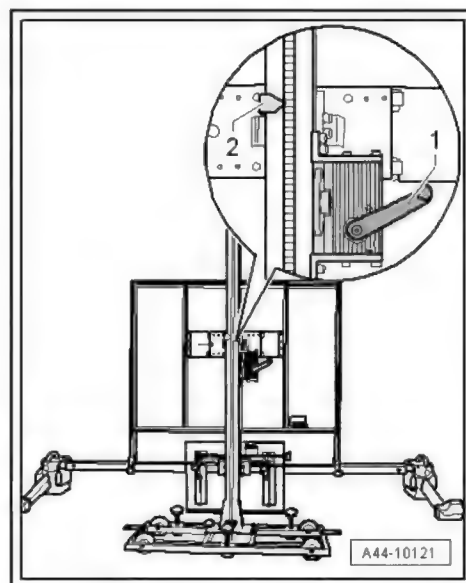
- Using crank -1-, adjust calibration screen to specified height -2- as indicated by wheel alignment computer.

When specified height -2- has been set, move measuring bar up slightly and tighten clamping bolt.



#### Note

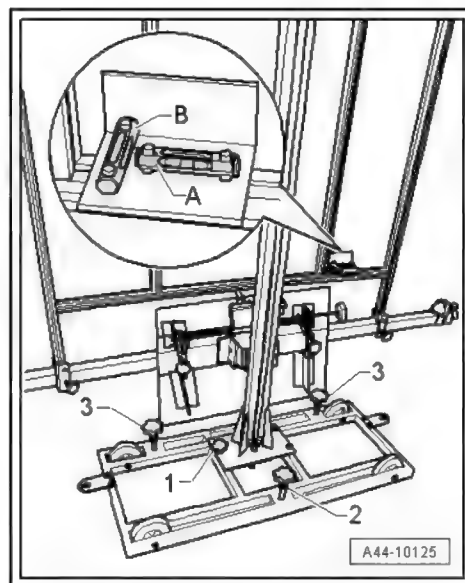
*If the height of the calibration screen has to be corrected at a later stage of the procedure, the measuring bar must be set on the floor when making the adjustment.*





- Set spirit level -A- to horizontal position with adjuster screw -1-.

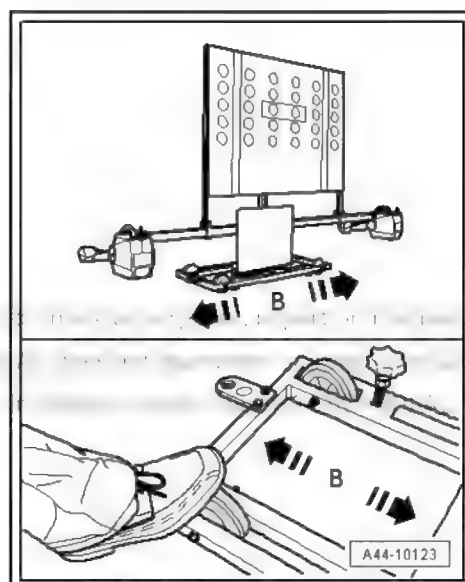
The spirit level -A- has to be adjusted at this point to compensate for any floor irregularities.



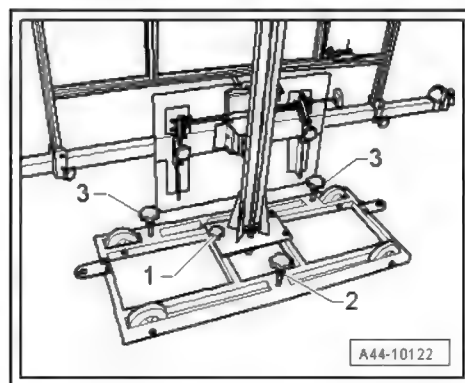
- Move -VAS 6430- sideways -arrow B- until display on wheel alignment computer is within tolerance.



WHEEL ALIGNMENT  
WHEEL ALIGNMENT  
WHEEL ALIGNMENT



- Secure by tightening bolts -2- and -3- -VAS 6430- lightly. (This will prevent the -VAS 6430- from rolling away).



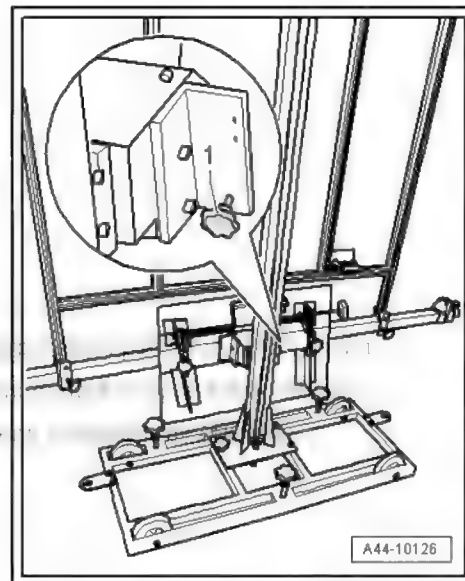




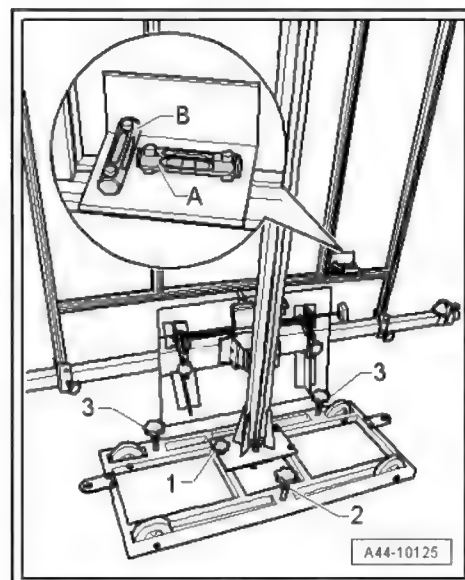
- Turn fine adjustment screw -1- until display on wheel alignment computer is within tolerance.



Technical description of the vehicle diagnostic tester (VDT) is given in the "Vehicle diagnostic tester" chapter of the "Vehicle diagnostic tester" manual.



- Set spirit level -A- to horizontal position with adjuster screw -1-.



- Set spirit level -B- to horizontal position with adjuster screw -2-.

Concluding work is carried out via ⇒ Vehicle diagnostic tester.

- Connect vehicle diagnostic tester and start **Guided Fault Finding** for the vehicle in question.

Wait until the vehicle diagnostic tester has interrogated all control units in the vehicle.

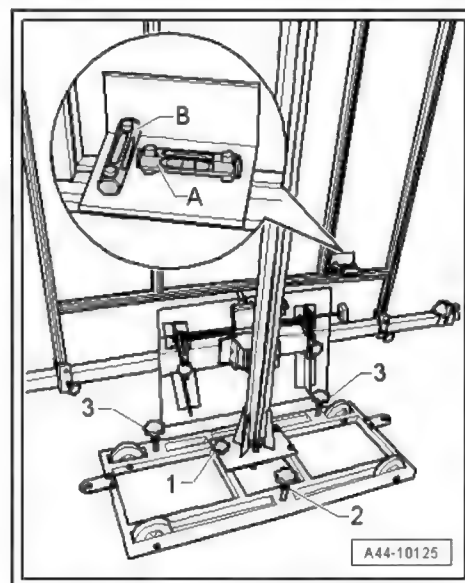
- Press the **Go to** button and select the option "Function/component selection".
- Select the relevant program in **Guided Functions**.

Then follow the instructions on the screen to perform the calibration.



Note

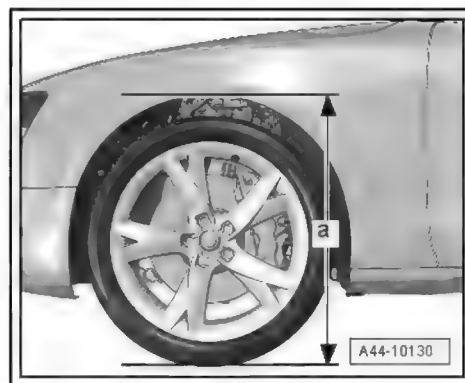
*The next step required in the Guided Fault Finding program is to measure the height of the body.*







- Measure height of body -a- at all four wheels between tyre contact surface and bottom edge of wing panel/wheel housing at centre of wheel.







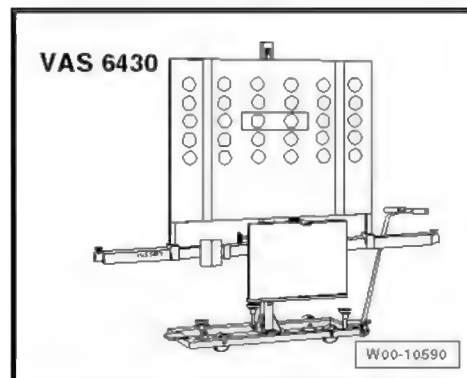
## 6 Night vision system

⇒ "6.1 Calibrating night vision system", page 371

### 6.1 Calibrating night vision system

Special tools and workshop equipment required

- ◆ Setting device, basic set - VAS 6430/1- or setting device - VAS 6430-



- ◆ Calibration unit for night vision system - VAS 6430/6-
- ◆ Linear laser - VAS 6350/3- (can be taken from calibration unit - VAS 6350- )
- ◆ Vehicle diagnostic tester
- ◆ Wheel alignment computer



#### Note

- ◆ Check that the camera for night vision system - R212- is correctly seated in the bracket and that the camera vision is unobstructed (visual inspection).
- ◆ Check whether the protection window on the camera for night vision system - R212- has been damaged by a stone chip and renew if necessary ⇒ Communication; Rep. gr. 91 ; Night vision system; Removing and installing camera for night vision system .
- ◆ If the vehicle is equipped with adaptive cruise control and night vision system, the night vision system must be adjusted/calibrated before the adaptive cruise control.
- ◆ If the ACC reflective mirror, Audi - VAS 6430/3- is attached to the cross bar of the setting device, basic set - VAS 6430/1- or setting device - VAS 6430- , it must be removed.

There are two options for performing the calibration/adjustment:

#### Quick-start

This procedure (calibration/adjustment only) should be selected if:

- ◆ The fault "No or incorrect basic setting / adaption" is registered in the event memory.
- ◆ The camera has been removed or renewed.
- ◆ The bumper or radiator grille has been removed or renewed.

#### Full wheel alignment

This procedure (calibration/adjustment and wheel alignment) should be selected if:





- ◆ Adjustments have been made to the rear suspension geometry.
- ◆ The running gear of the vehicle has been modified in any way.



#### Note

*The two procedures are programmed on the wheel alignment computer. Each procedure runs automatically. All you have to do is select the relevant program.*

Please note preparations required before calibration/adjustment of driver assist systems ⇒ [page 332](#) .

Adjustment procedure (when wheel alignment has not been previously checked)

- Select calibration procedure for night vision system on wheel alignment computer.
- Attach wheel alignment sensors according to instructions on wheel alignment computer.

Calibration/adjustment procedure (when wheel alignment has been previously checked)

- Connect battery charger ⇒ Electrical system; Rep. gr. 27 ; Battery; Charging battery .
- Bring front wheels into straight-ahead position.
- Connect up vehicle diagnostic tester to vehicle and run diagnostic cable out through open window.
- Switch off exterior lights on vehicle.
- Close all vehicle doors.

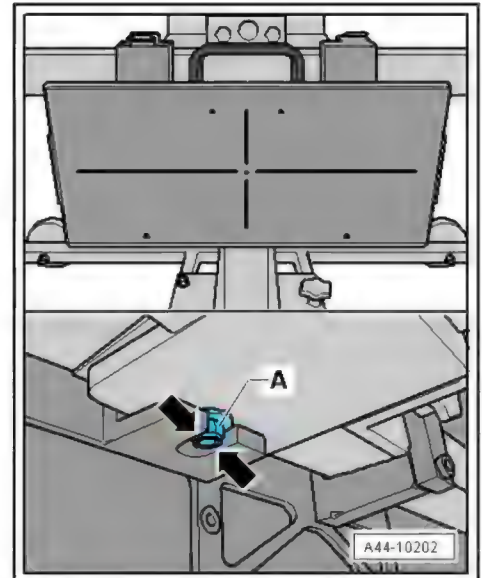
Procedure for all vehicles:

- Connect up vehicle diagnostic tester to vehicle and run diagnostic cable out through open window.

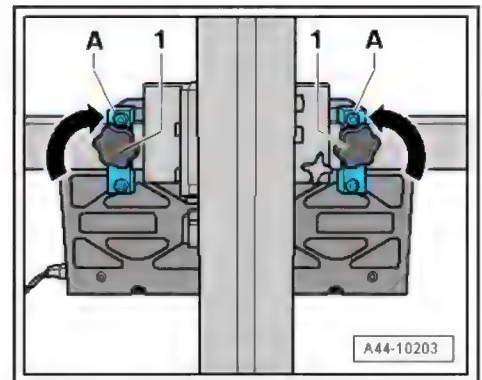




- Place calibration unit for night vision system on centre of cross bar on setting device, basic set - VAS 6430/1- .
- When sliding calibration unit for night vision system onto cross bar, recess -arrows- must surround nut or bolt -A-.



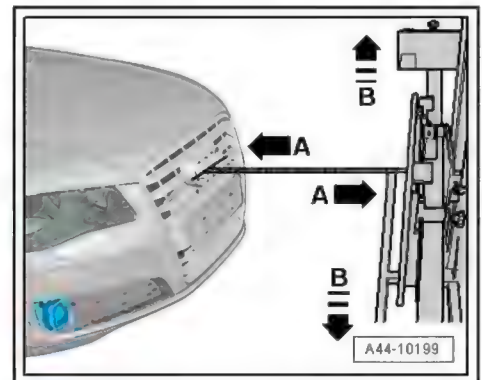
- Swivel clamps -A- into place (left and right).
- Hand-tighten clamping bolts -1- (left and right).



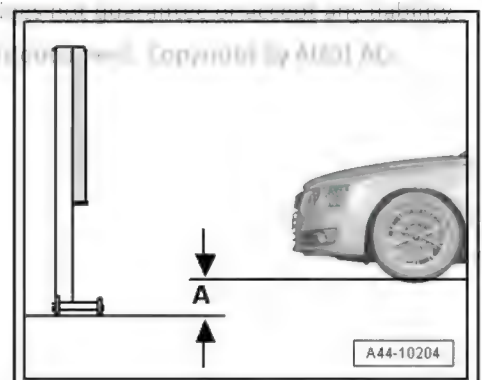
- Position setting device, basic set - VAS 6430/1- with calibration unit for night vision system in front of vehicle.
- Position calibration unit for night vision system - VAS 6430/6- at distance -A- from camera for night vision system.

**i** Note

Distance -A- = 120 cm  $\pm$  2.5 cm, measured from calibration unit for night vision system - VAS 6430/6- to lens of camera for night vision system - R212- .

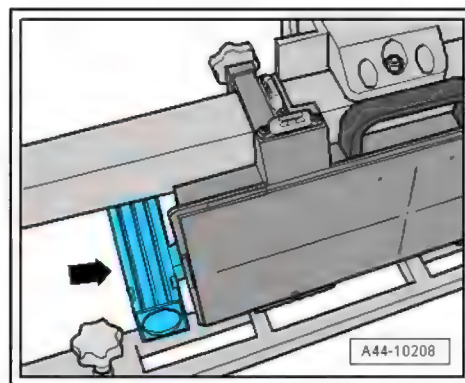


- Attach front wheel alignment sensors to cross bar.
- For the next steps, the lifting platform must be set to the lowest available position -A-.



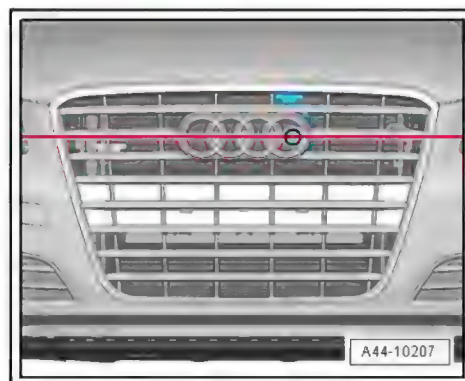


- Insert linear laser - VAS 6350/3- -arrow- into guide on calibration unit for night vision system and secure.
- Switch on linear laser - VAS 6350/3- . A laser beam will be directed at the vehicle.



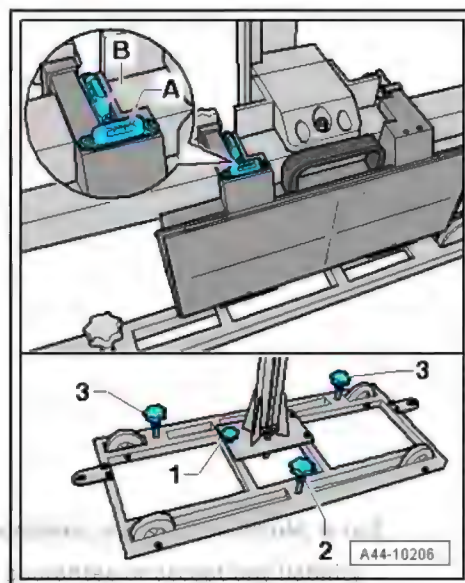
- Use crank on rear side of calibration unit to align laser beam with centre of camera lens in horizontal plane.

The specified height has now been attained and the linear laser - VAS 6350/3- can be switched off.



- Set spirit level -A- to horizontal position with adjuster screw -1-.

The spirit level -A- has to be adjusted at this point to compensate for any floor irregularities.

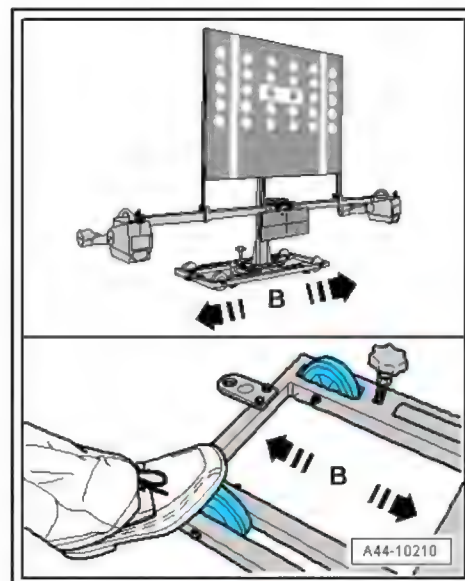


2

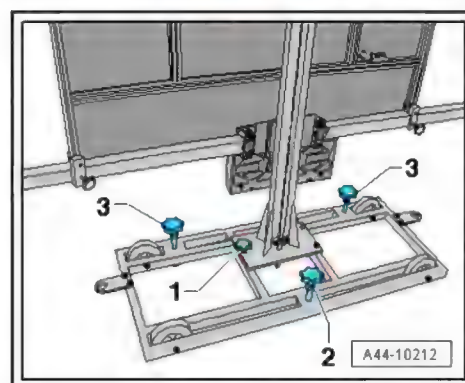




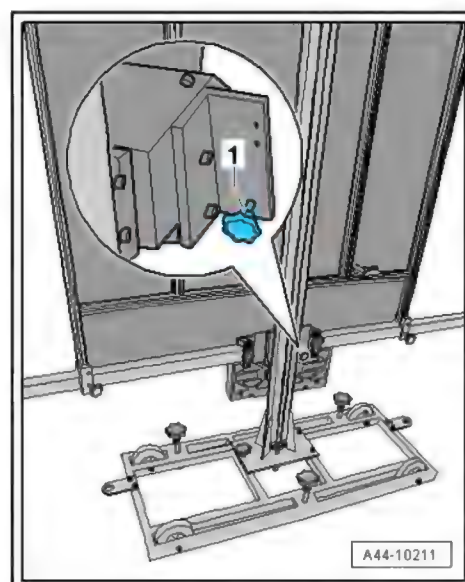
- Move -VAS 6430- sideways -arrow B- until display on wheel alignment computer is within tolerance.



- Secure by tightening bolts -2- and -3- -VAS 6430- lightly. (This will prevent the -VAS 6430- from rolling away).

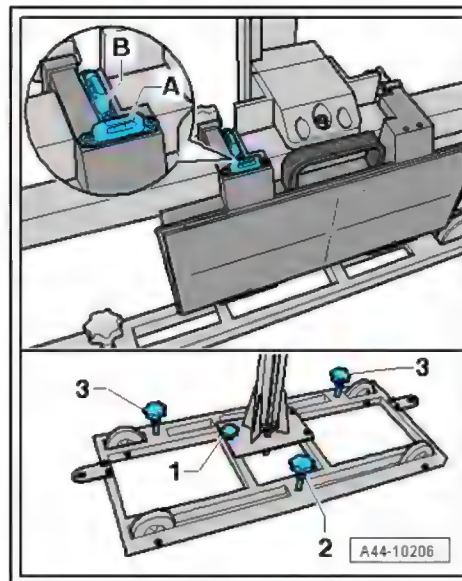


- Turn fine adjustment screw -1- on cross bar until display on wheel alignment computer is within tolerance.



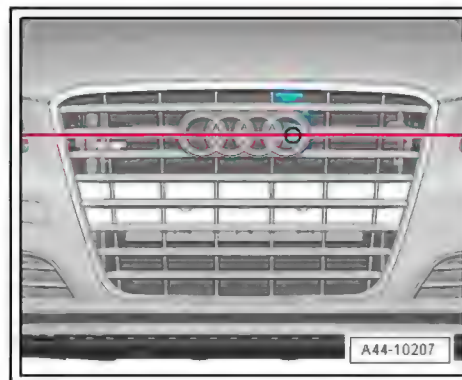


- Set spirit level -A- to horizontal position with adjuster screw -1-.
- Set spirit level -B- to horizontal position with adjuster screw -2-.



- Switch on linear laser - VAS 6350/3- again, check specified height and correct if necessary. A laser beam will be directed at the vehicle.
- Use crank on rear side of calibration unit to align laser beam with centre of camera lens in horizontal plane.

The specified height has now been attained and the linear laser - VAS 6350/3- can be switched off.



- Connect power cable -A- of calibration unit for night vision system to mains.
- Switch on calibration unit for night vision system at switch -B-.



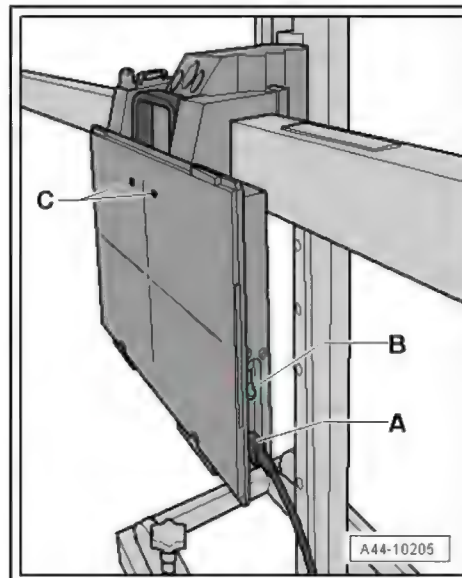
#### Note

An internal initialisation routine runs on the calibration unit for night vision system when you switch it on. If the routine is completed successfully without errors, both LEDs -C- flash simultaneously and an acoustic tone can be heard at the same time. The calibration unit for night vision system then goes into standby mode (the green LED will flash slowly to indicate this status).



#### Note

Check the spirit levels (visual inspection) and re-adjust if necessary.





- Press button -A- to activate the heating function.

An acoustic signal confirms that the heating function has been activated. The heater element is then in the warm-up phase.

When the specified temperature is reached, the green LED lights up permanently.

The control unit automatically switches off the heater elements after about 20 minutes. A periodic acoustic signal will be given about 1 minute before this happens.

The automatic timer can be reset to 20 minutes at any time by briefly pressing button -A-. An acoustic signal confirms that the timer has been reset.

Concluding work is carried out via ➔ Vehicle diagnostic tester.

- Connect vehicle diagnostic tester and start Guided Fault Finding for the vehicle in question.

Wait until the vehicle diagnostic tester has interrogated all control units in the vehicle.

- Press the Go to button and select the option "Function/component selection".
- Select the relevant program in Guided Functions.

Follow adjustment/calibration instructions on screen of diagnostic tester.

Mechanical alignment of the camera for night vision system - R212- around its roll axis is achieved by turning the adjuster screw with a hexagon key (minimum length approx. 120 mm).

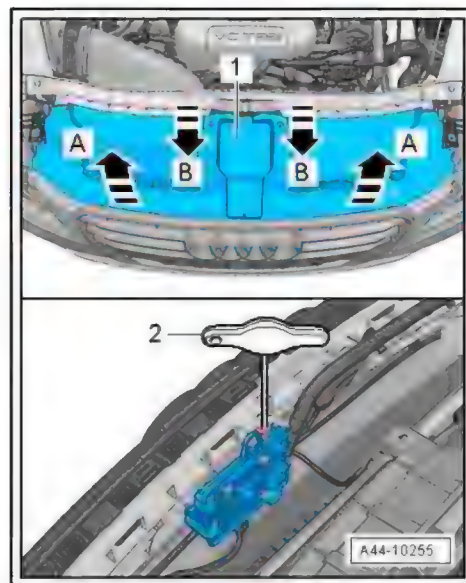
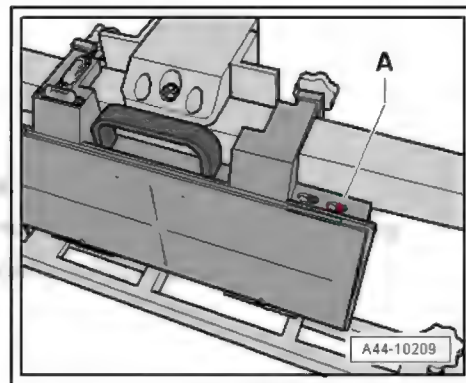
- To do so, open bonnet and detach lock carrier cover -1- ➔ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Exploded view - bumper cover .
- Apply hexagon key -2- and adjust in accordance with specifications in "Guided Fault Finding".



#### Note

*Ensure that no objects or persons are between the camera for night vision system - R212- and the calibration unit for night vision system during the adjustment procedure.*

Adjustment of the pitch and yaw angles for the camera for night vision system - R212- is fully electronic: start the appropriate program on ➔ Vehicle diagnostic tester in Guided Functions mode.





## 48 – Steering

### 1 Steering wheel

⇒ "1.1 Exploded view - steering wheel", page 378

⇒ "1.2 Removing and installing steering wheel", page 378

#### 1.1 Exploded view - steering wheel

1 - Steering column electronics control unit - J527-

- ❑ Removing and installing  
⇒ Electrical system;  
Rep. gr. 94 ; Steering  
column switch module;  
Removing and installing  
steering column elec-  
tronics control unit -  
J527-

2 - Airbag steering wheel

- ❑ Removing and installing  
⇒ page 378

3 - Bolt

- ❑ 50 Nm
- ❑ Always renew if re-  
moved

4 - Electrical connector

5 - Electrical connector

6 - Driver's airbag unit

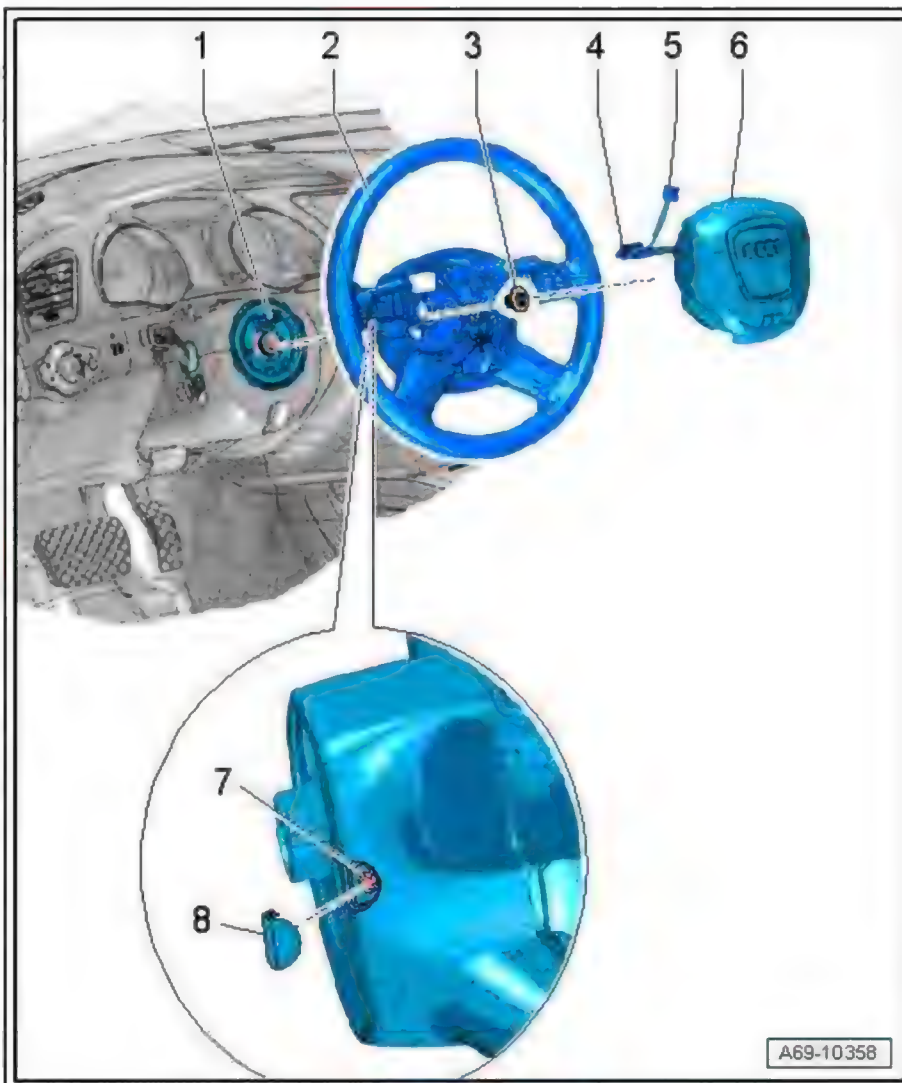
- ❑ Removing and installing  
⇒ General body repairs,  
interior; Rep. gr. 69 ;  
Airbag (driver side); Re-  
moving and installing  
airbag unit with igniters

7 - Locking bar

- ❑ Releasing ⇒ General  
body repairs, interior;  
Rep. gr. 69 ; Airbag  
(driver side); Removing  
and installing airbag unit  
with igniters

8 - Trim cap

- ❑ Not fitted on this model



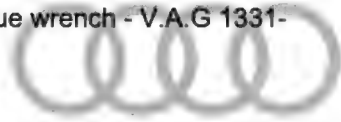
#### 1.2 Removing and installing steering wheel

Special tools and workshop equipment required





◆ Torque wrench - V.A.G 1331-



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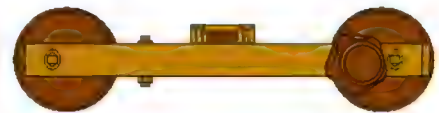
V.A.G 1331



W00-11166

◆ Steering wheel balance - VAS 6458-

VAS 6458



W00-11697

Removing



Note

- ◆ *Applies to vehicles with dynamic steering:*
- ◆ *Before detaching it from the steering column, the steering wheel must be aligned accurately in a horizontal position using the steering wheel balance - VAS 6458-. Use the steering wheel balance - VAS 6458- to align the new steering wheel horizontally on the steering column.*
- ◆ *After completing the above step, check the steering wheel position on the steering angle sender - G85-. To do so, select the corresponding measured value block in the self-diagnosis for the steering column electronics control unit - J527-. If the value displayed is  $> 0.5^\circ$ , the steering angle sender - G85- must be re-calibrated and the dynamic steering re-adapted: start the appropriate program on  $\Rightarrow$  Vehicle diagnostic tester in Guided Functions mode.*
- Turn wheels to straight ahead position.
- Move steering wheel upwards and rearwards as far as possible, using the full range of the steering column adjuster.
- Remove airbag unit (driver side)  $\Rightarrow$  General body repairs, interior; Rep. gr. 69 ; Airbag (driver side); Removing and installing airbag unit with igniters .



Note

*The steering must be in the centre position (wheels straight-ahead) when the steering wheel is removed and installed.*





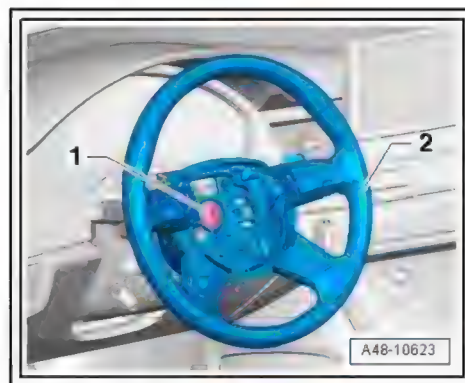
- Remove bolt -1-.
- Mark relative position of steering wheel to steering column with a felt-tip pen.
- Pull steering wheel -2- off steering column.

#### Installing

Installation is carried out in reverse sequence. Note the following:

Before fitting steering wheel, make sure wheels are in straight ahead position.

- If installing original steering wheel: Make sure marks on steering column and steering wheel coincide.
- If installing new steering wheel (no marks): Steering wheel must be mounted in centre position (spoke horizontal and wheels in straight-ahead position).
- Install steering wheel.
- Install airbag unit ⇒ General body repairs, interior; Rep. gr. 69 ; Airbag (driver side); Removing and installing airbag unit with igniters .
- Test-drive vehicle.
- If steering wheel is not straight, remove it again and adjust it on steering column splines.



#### Tightening torques

- ◆ ⇒ ["1.1 Exploded view - steering wheel", page 378](#)

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## 2 Steering column

⇒ [“2.1 Exploded view - steering column”, page 381](#)

⇒ [“2.2 Checking steering column for damage”, page 385](#)

⇒ [“2.3 Handling and transporting steering column”, page 386](#)

⇒ [“2.4 Removing and installing steering column”, page 387](#)

⇒ [“2.5 Removing and installing safety lock for active steering \(locking solenoid\)”, page 392](#)

⇒ [“2.6 Removing and installing intermediate steering shaft”, page 395](#)

⇒ [“2.7 Removing and installing control unit for electronic steering column lock J764 ”, page 398](#)

⇒ [“2.8 Removing and installing control unit for electrically adjustable steering column J866 ”, page 400](#)

### 2.1 Exploded view - steering column

⇒ [“2.1.1 Exploded view - steering column \(with manual adjustment\)”, page 381](#)

⇒ [“2.1.2 Exploded view - steering column \(with electrical adjustment\)”, page 384](#)

#### 2.1.1 Exploded view - steering column (with manual adjustment)



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#### 1 - Bolt

- ☐ 30 Nm
- ☐ Always renew if removed
- ☐ The tapped hole for the bolt must always be cleaned (e.g. with a thread tap)
- ☐ First, start the thread of the bolt and try to pull off the intermediate steering shaft to check that it is correctly seated. Then tighten bolt.

#### 2 - Intermediate steering shaft

- ☐ Removing and installing  
⇒ [page 395](#)
- ☐ Note correct position of sealing boot

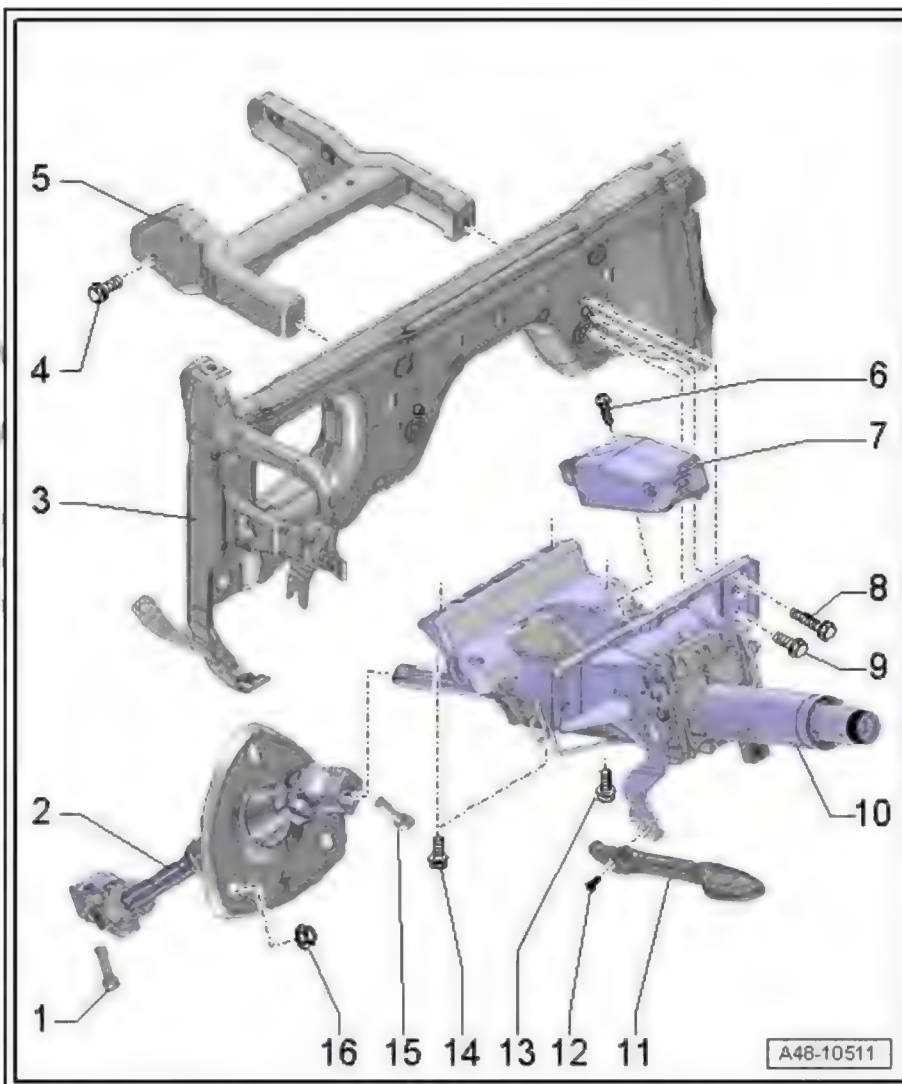
#### 3 - Dash panel cross member

#### 4 - Bolt

- ☐ Tightening torque ⇒  
General body repairs,  
interior; Rep. gr. 70 ;  
Dash panel cross member;  
Exploded view -  
dash panel cross member

#### 5 - Mounting bracket

- ☐ Removing and installing  
⇒ General body repairs,  
interior; Rep. gr. 70 ;  
Dash panel cross member;  
Removing and installing  
mounting bracket



#### 6 - Bolt

- ☐ 5 Nm

#### 7 - Control unit for electronic steering column lock - J764-

- ☐ Fitted on vehicles with safety ignition lock
- ☐ Removing and installing ⇒ [page 398](#)
- ☐ When renewing control unit, select "Replace" function for relevant control unit using ⇒ Vehicle diagnostic tester in Guided Functions mode.

#### 8 - Bolt

- ☐ 20 Nm
- ☐ 2x
- ☐ Note correct installation sequence ⇒ [page 391](#)

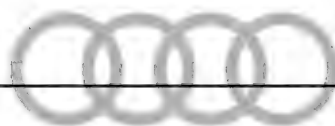
#### 9 - Bolt

- ☐ 20 Nm
- ☐ 2x
- ☐ Note correct installation sequence ⇒ [page 391](#)

#### 10 - Steering column

- ☐ Different versions; for correct version refer to ⇒ Electronic parts catalogue
- ☐ Vehicles with dynamic steering: system must be re-calibrated if steering column is renewed  
⇒ [page 355](#)





- ☐ Removing and installing ⇒ [page 387](#)

- ☐ Checking for damage ⇒ [page 385](#)

11 - Handle

12 - Bolt

- ☐ 5 Nm

13 - Bolt

- ☐ Secures pedal cluster
- ☐ Tightening torque ⇒ Brake system; Rep. gr. 46 ; Brake pedal; Exploded view - brake pedal

14 - Bolt

- ☐ 20 Nm
- ☐ 2x
- ☐ Note correct installation sequence ⇒ [page 391](#)

15 - Bolt

- ☐ 30 Nm
- ☐ Always renew if removed
- ☐ The tapped hole for the bolt must always be cleaned (e.g. with a thread tap)

16 - Nut

- ☐ 3 Nm



## 2.1.2 Exploded view - steering column (with electrical adjustment)

### 1 - Bolt

- ☐ 30 Nm
- ☐ Always renew if removed
- ☐ The tapped hole for the bolt must always be cleaned (e.g. with a thread tap)
- ☐ First, start the thread of the bolt and try to pull off the intermediate steering shaft to check that it is correctly seated. Then tighten bolt.

### 2 - Intermediate steering shaft

- ☐ Removing and installing ⇒ [page 395](#)
- ☐ Note correct position of sealing boot

### 3 - Control unit for electrically adjustable steering column - J866-

- ☐ Removing and installing ⇒ [page 400](#)

### 4 - Dash panel cross member

### 5 - Bolt

- ☐ Tightening torque ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel cross member; Exploded view - dash panel cross member

### 6 - Mounting bracket

- ☐ Removing and installing ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel cross member; Removing and installing mounting bracket

### 7 - Bolt

- ☐ 5 Nm

### 8 - Bolt

- ☐ 5 Nm

### 9 - Control unit for electronic steering column lock - J764-

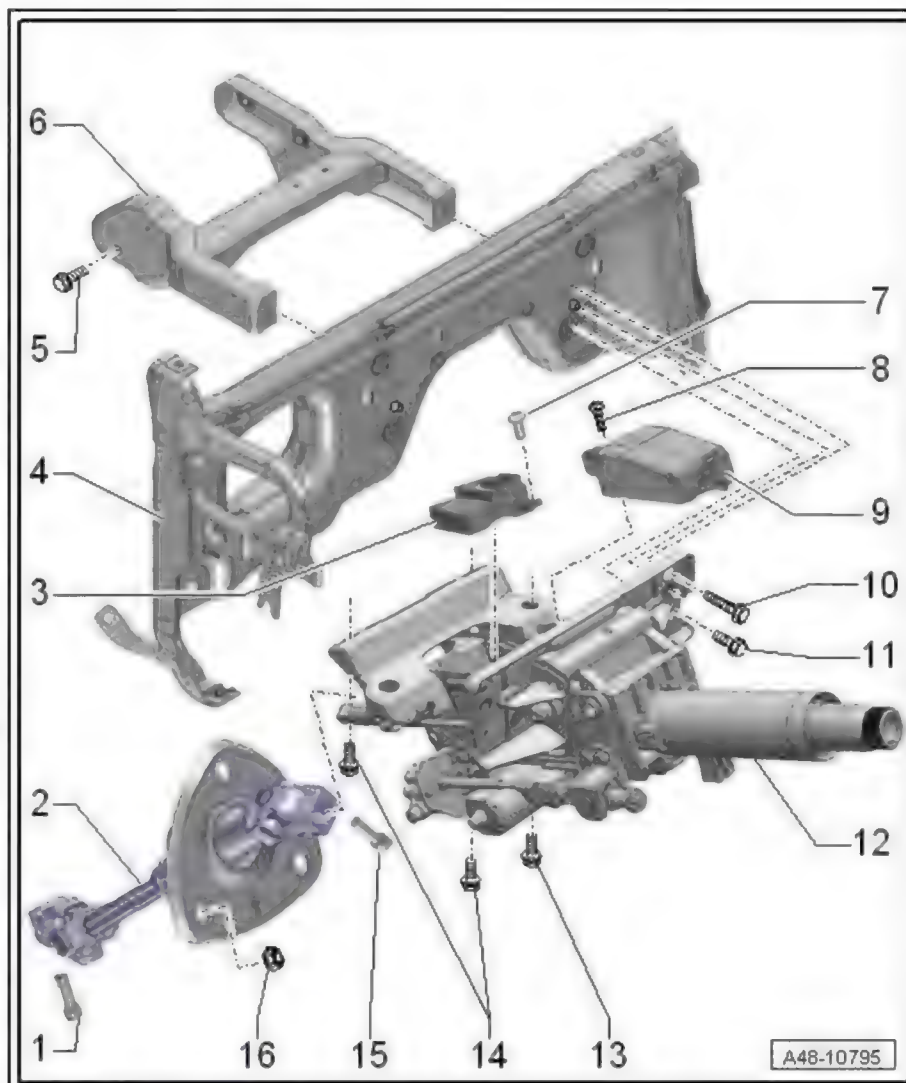
- ☐ Removing and installing ⇒ [page 398](#)
- ☐ Fitted on vehicles with safety ignition lock
- ☐ When renewing control unit, select "Replace" function for relevant control unit using ⇒ Vehicle diagnostic tester in **Guided Functions** mode.

### 10 - Bolt

- ☐ 20 Nm
- ☐ 2x
- ☐ Note correct installation sequence ⇒ [page 391](#)

### 11 - Bolt

- ☐ 20 Nm







- ☐ 2x
- ☐ Note correct installation sequence ⇒ [page 391](#)

#### 12 - Steering column

- ☐ Different versions; for correct version refer to ⇒ Electronic parts catalogue
- ☐ Vehicles with dynamic steering: system must be re-calibrated if steering column is renewed  
⇒ [page 355](#)
- ☐ Removing and installing ⇒ [page 387](#)
- ☐ Checking for damage ⇒ [page 385](#)

#### 13 - Bolt

- ☐ Secures pedal cluster
- ☐ Tightening torque ⇒ Brake system; Rep. gr. 46 ; Brake pedal; Exploded view - brake pedal

#### 14 - Bolt

- ☐ 20 Nm
- ☐ 2x
- ☐ Note correct installation sequence ⇒ [page 391](#)

#### 15 - Bolt

- ☐ 30 Nm
- ☐ Always renew if removed
- ☐ The tapped hole for the bolt must always be cleaned (e.g. with a thread tap)

#### 16 - Nut

- ☐ 3 Nm

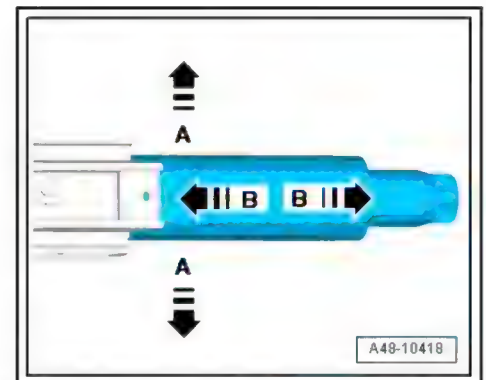
## 2.2 Checking steering column for damage

### Visual inspection

- Check all parts of steering column for damage.

### Checking function

- Check that steering column turns easily and smoothly.
- Check that steering column can be adjusted for height and reach without sticking.
- Check whether the tube moves clearly in direction of arrow -A- or -B-.
- If it does, the steering column must be renewed.





## 2.3 Handling and transporting steering column

⇒ "2.3.1 Handling and transporting steering column (with manual adjustment)", page 386

⇒ "2.3.2 Handling and transporting steering column (with electrical adjustment)", page 387

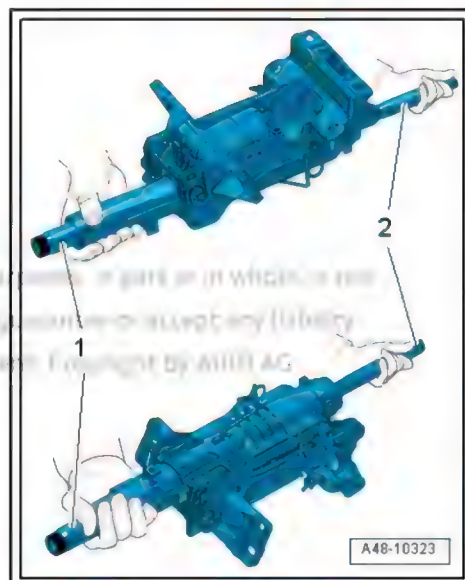
### 2.3.1 Handling and transporting steering column (with manual adjustment)

#### NOTICE

- ◆ These instructions for handling the steering column **MUST** be observed at all times.
- ◆ Incorrect handling can damage the steering column and thus cause a safety risk.

#### Correct handling and transportation of steering column

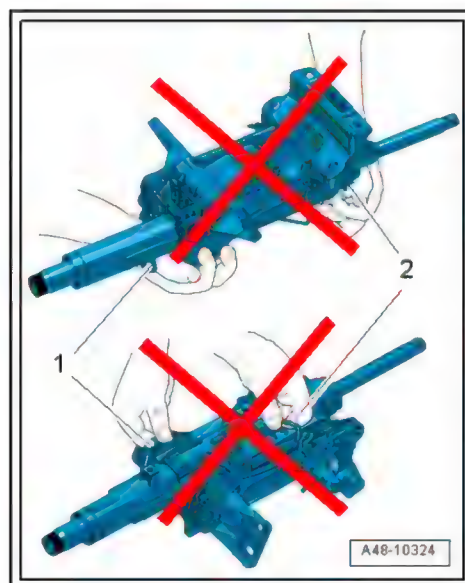
- ◆ Using gloves, take the steering column out of its packaging with both hands and carry it with both hands.
- ◆ Take hold of the steering column by the upper column tube -1- and close to the upper universal joint -2- as shown in the illustration.



#### Incorrect handling of steering column

Carrying the steering column by the following parts will cause damage:

- 1 - Release handle
  - 2 - Weight balancing springs
- ◆ A steering column that has been dropped onto a hard surface or shows signs of damage must not be installed in the vehicle.
  - ◆ The steering column must not be put down on the shafts at either end.
  - ◆ The ends of the shafts must not be subjected to any impact.





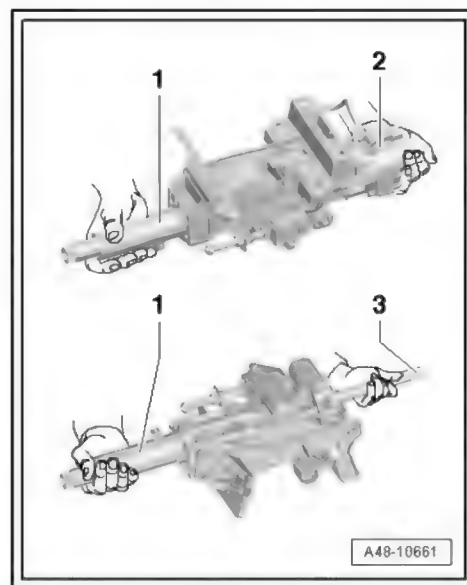
## 2.3.2 Handling and transporting steering column (with electrical adjustment)

### ⚠ CAUTION

- ◆ These instructions for handling the steering column **MUST** be observed at all times.
- ◆ Incorrect handling can damage the steering column and thus cause a safety risk.

#### Correct handling and transportation of steering column

- ◆ Using gloves, take the steering column out of its packaging with both hands and carry it with both hands.
- ◆ Take hold of the steering column as shown in the illustration at the top column tube -1- and near the dynamic steering adjuster -2- or at the bottom column tube -3- (depending on the version).

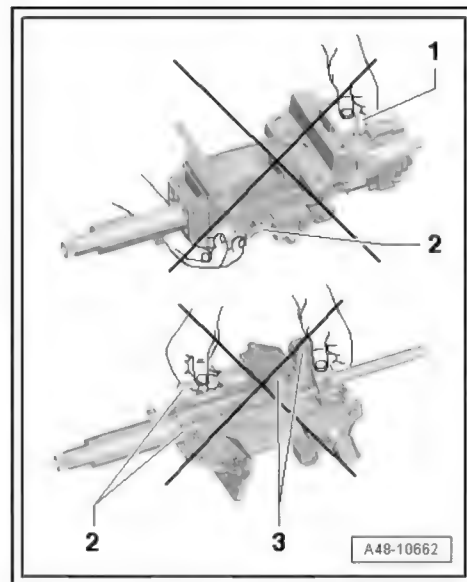


#### Incorrect handling of steering column

Carrying the steering column by the following parts will cause damage:

- 1 - Connector and wiring harness
- 2 - Spindles of electric steering column adjuster
- 3 - Motors of electric steering column adjuster

- ◆ A steering column that has been dropped onto a hard surface or shows signs of damage must not be installed in the vehicle.
- ◆ The steering column must not be put down on the shafts at either end.
- ◆ The ends of the shafts must not be subjected to any impact.



## 2.4 Removing and installing steering column

### Special tools and workshop equipment required



◆ Torque wrench - V.A.G 1331-



### Removing



Before removing the steering column, please note the following points:

Draw a sketch showing

- ◆ the layout of the electrical wiring harnesses
- ◆ the attachment of the electrical wiring harnesses
- ◆ the fitting locations of the cable ties.

This applies particularly to the wiring harness for the control unit for electronic steering column lock - J764- .

Before installing the steering column, please note the following points:

- Restore the layout of the electrical wiring harnesses exactly as it was prior to removal.
- Restore the attachments of the electrical wiring harnesses exactly as they were prior to removal.
- All cable ties unfastened or cut open when removing the steering column must be re-attached in the same position when refitting it.
- When adjusting the steering column, check that the wiring harness leading to the control unit for electronic steering column lock - J764- is not trapped and does not come into contact with any sharp edges.



### Note

- ◆ *The replacement steering column is only supplied as a complete unit. Repair is not possible.*
- ◆ *Only the control unit for electronic steering column lock - J764- can be renewed separately.*
- Turn wheels to straight ahead position.
- Move steering wheel down and to rear as far as possible, making use of full range of steering column adjuster.
- Remove steering wheel ⇒ [page 378](#) .
- Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .



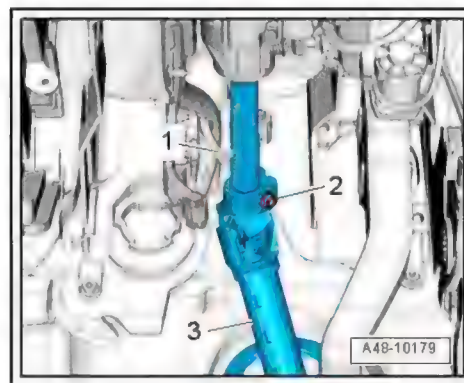


- If fitted, remove knee airbag with bracket (driver side) ⇒ General body repairs, interior; Rep. gr. 69 ; Knee airbags; Removing and installing knee airbag with igniter .
- Remove footwell vent (driver side) ⇒ Heating, air conditioning; Rep. gr. 87 ; Air duct system; Removing and installing footwell vent (driver side) .
- Remove steering column trim ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Exploded view - steering column trim .
- Remove steering column switch module ⇒ Electrical system; Rep. gr. 94 ; Steering column switch module; Removing and installing steering column switch module .

**! NOTICE**

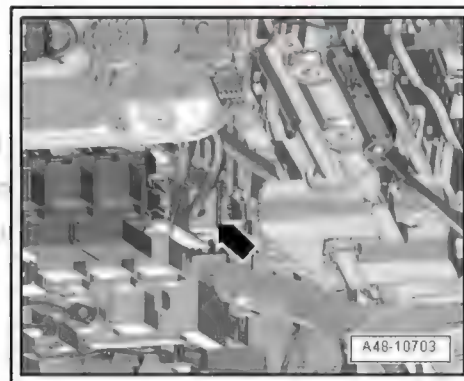
On steering columns for dynamic steering: never slacken or remove the bolts of the dynamic steering unit.

- Remove bolt -2- and detach intermediate steering shaft -3- from steering column -1-.

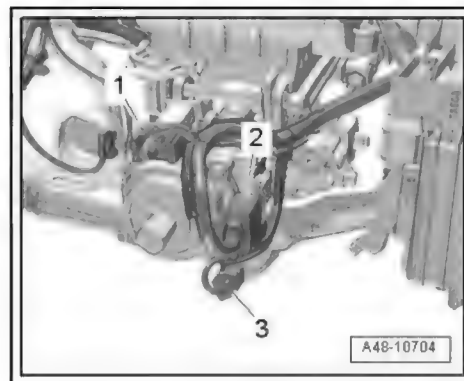


Applies to electrically adjustable steering column:

- Unplug electrical connector -arrow- and move clear.



- If fitted, unplug electrical connectors -1, 2, 3- for dynamic steering and move clear.

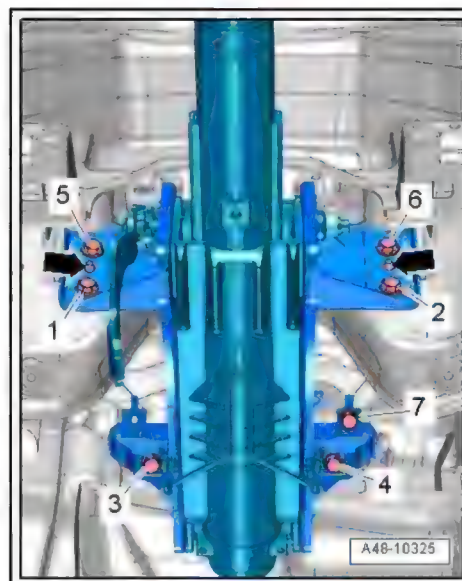






Applies to all versions:

- Unscrew bolts -1 ... 7- for steering column from central tube, supporting steering column by hand from below.
- Pull steering column back slightly, detach from positioning holes -arrows- on central tube and lower.



- On vehicles with safety ignition lock, unplug electrical connector -1- at control unit for electronic steering column lock - J764- , move wiring harness -2- clear and detach steering column.

#### Installing

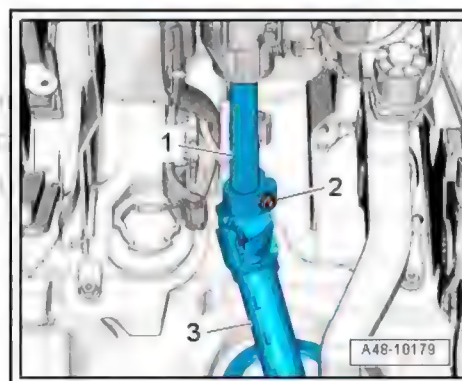
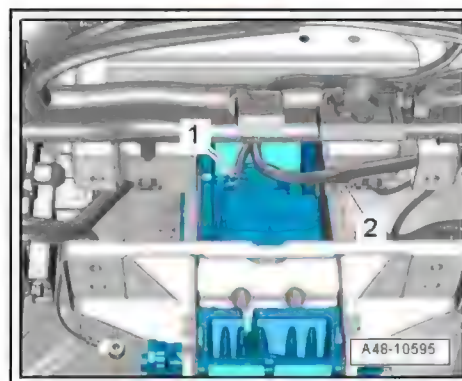
Installation is carried out in reverse sequence. Note the following:

- If the steering column has been renewed on a vehicle with safety ignition lock, use the bolt fitted in the new steering column to secure control unit for electronic steering column lock - J764- .



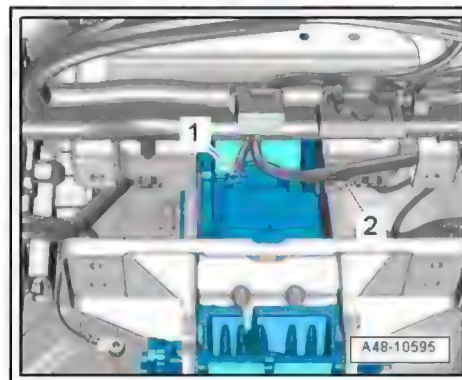
#### Note

- ♦ *If the steering column has been renewed, use the bolt fitted in the new steering column to secure control unit for electronic steering column lock - J764- .*
- ♦ *Before fitting new bolt -2-, clean threaded hole with a thread tap or similar.*



#### Vehicles with safety ignition lock

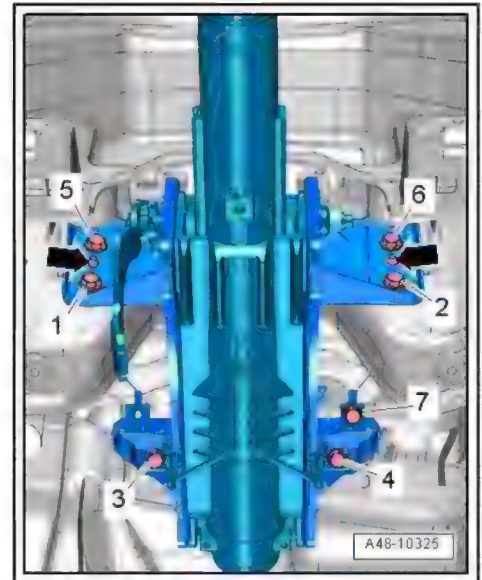
- After plugging in electrical connector -1-, make sure wiring harness is secured by clip -2- at the appropriate location.
- Check that wiring harness -3- leading to control unit for electronic steering column lock - J764- -1- does not become trapped and does not come into contact with sharp edges when steering column is adjusted.





Note correct installation sequence

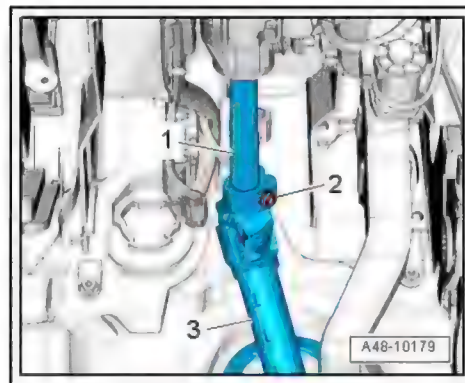
- Fit positioning pins -arrows- on steering column into positioning holes on central tube.
- Screw in all bolts only loosely.
- First tighten bolt -1- to specified torque.
- Then tighten bolt -2- to specified torque.
- Then tighten bolts -3- and -4- to specified torque.
- Then tighten bolts -5- and -6- to specified torque.
- Tighten bolt -7- to specified torque.



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- Push intermediate steering shaft -3- onto steering column -1- as far as stop and tighten bolt -2-.
- If previously fitted, install knee airbag with bracket (driver side) ⇒ General body repairs, interior; Rep. gr. 69 ; Knee airbags; Removing and installing knee airbag with igniter .
- Install steering column switch module ⇒ Electrical system; Rep. gr. 94 ; Steering column switch module; Removing and installing steering column switch module .
- Install steering column trim ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Exploded view - steering column trim .
- Install footwell vent (driver side) ⇒ Heating, air conditioning; Rep. gr. 87 ; Air duct system; Removing and installing footwell vent (driver side) .
- Install dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .
- Install steering wheel ⇒ [page 378](#) .
- If control unit for electronic steering column lock - J764- has been renewed it must be re-adapted to the immobilizer; start appropriate program on ⇒ Vehicle diagnostic tester in Guided Functions.



#### Note

*If the same steering column and the same control unit for electronic steering column lock - J764- are being re-installed, the control unit for electronic steering column lock - J764- does not have to be adapted.*

- After installing the steering column switch module, the steering angle sender - G85- must be calibrated; start the appropriate program on ⇒ Vehicle diagnostic tester in Guided Functions mode.
- If steering column was renewed, "Basic setting for dynamic steering" must be performed on vehicles with dynamic steering (active steering)  
⇒ ["3.3 Basic setting for dynamic steering", page 355](#) .

#### Tightening torques

- ◆ ⇒ ["2.1 Exploded view - steering column", page 381](#)

## 2.5 Removing and installing safety lock for active steering (locking solenoid)

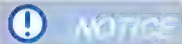
Special tools and workshop equipment required



◆ Torque wrench - V.A.G 1783-



◆ Vehicle diagnostic tester



Note the following before working on the steering column.

- Steering components are safety components!
- For reasons of safety, all work on the steering system must be carried out by suitably trained and qualified personnel. Work that is not performed properly can result in serious accidents.
- Restore the layout of the electrical wiring harnesses exactly as it was prior to removal.
- Restore the attachments of the electrical wiring harnesses exactly as they were prior to removal.

Removing



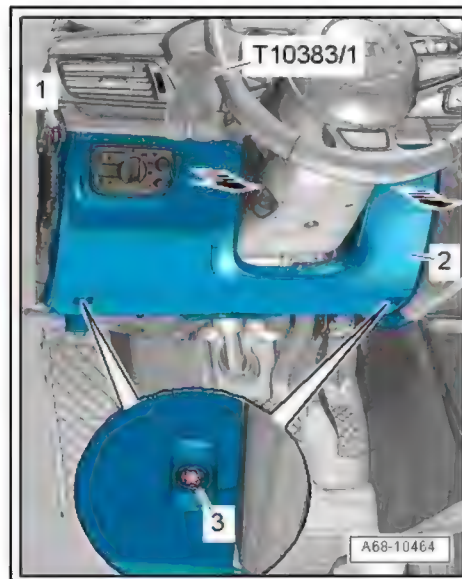
Note

*The steering wheel must not be turned and the straight-ahead position or the steering angle of the front wheels must not be altered when the actuator has been removed. Otherwise the steering wheel may not be properly centred after the work is completed. It is important to keep all components clean when carrying out the following steps.*

- Turn steering wheel to straight-ahead position (front and rear wheels must be in line) and allow steering lock to engage in straight-ahead position if possible.
- Switch off ignition.



- Remove dash panel cover (driver side) -2- ➔ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .

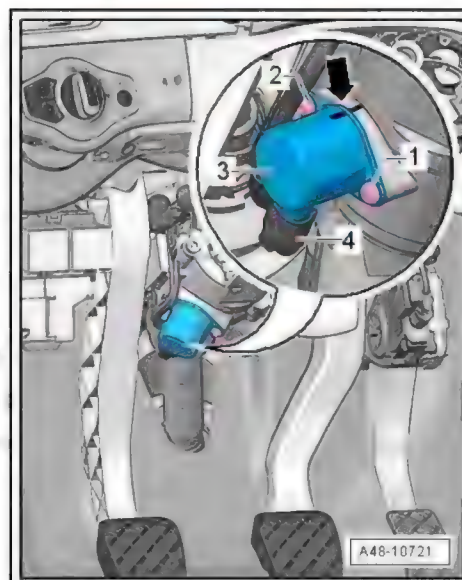


- Mark position of active steering safety lock actuator -F437- (dynamic steering) -arrow- for subsequent installation.
- Unplug electrical connector -4- from actuator -3-.
- Clean paint residue out of heads of bolts -1 and 2-.
- Remove bolts -1 and 2- and detach actuator -3- from steering column.
- To remove bolts -1 and 2-, use socket provided in repair kit for new actuator.

#### Installing

Protection: Installation is carried out in reverse sequence. Note the following:

- After renewing the active steering safety lock actuator -F437- (dynamic steering), you must perform a software update of the active steering control unit -J792- ; start the corresponding program on the ➔ Vehicle diagnostic tester in Guided Functions mode.
- If a new active steering safety lock actuator - F437- (dynamic steering) is being installed, transfer the marking from the old actuator to the new actuator before installation.





- Fit new actuator according to marking made before removal and secure with two new bolts -1 and 2- according to specifications in table below using socket supplied in repair kit.

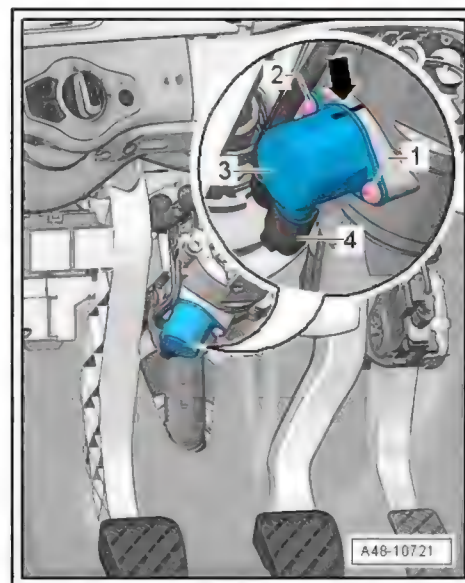
Sequence	Bolt no.	Tightening torque
1	1	2 + 2 Nm
2	2	4 + 2 Nm
3	1	8 + 2 Nm
4	2	8 + 2 Nm

- Plug in electrical connector at actuator.
- Erase event memory.
- Drive vehicle to initialise system - turn wheels to approx. 45° from the straight-ahead position in both directions.

#### Checking function

Road test vehicle in an area closed to traffic and check the function of the steering:

- ◆ Steering force
- ◆ Self-centring
- ◆ Play
- ◆ Noise
- ◆ Warning lamp
- Read out event memory after road test. The event memory must not show any faults.



## 2.6 Removing and installing intermediate steering shaft

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



#### Removing

- Turn wheels to straight ahead position.
- Move steering wheel down and to rear as far as possible, making use of full range of steering column adjuster.
- Move driver's seat back as far as possible.
- Switch off ignition and remove ignition key.



- To prevent unintentional turning, secure steering wheel in straight-ahead position with adhesive tape -arrow-.



#### Note

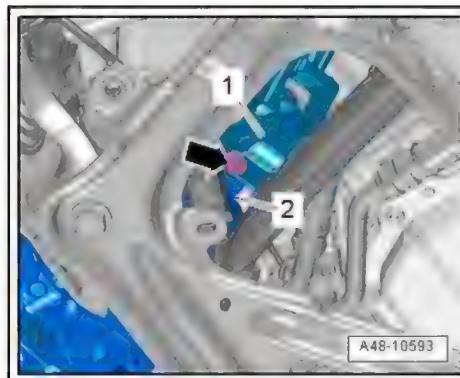
- ◆ Use adhesive tape that can be completely removed afterwards without leaving marks.
- ◆ Do not turn steering wheel while performing repair work, as otherwise airbag coil connector and return ring with slip ring - F138- could be damaged.
- Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .



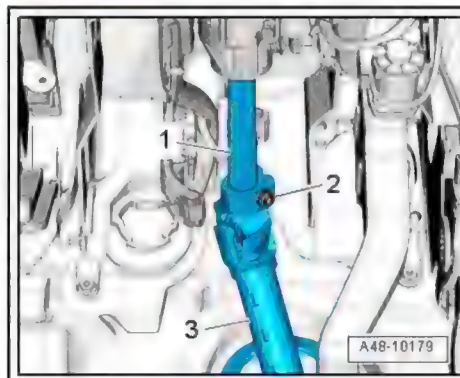
#### CAUTION

Risk of burns from the exhaust system depending on the type of engine.

- Remove bolt -arrow-.
- Detach intermediate steering shaft -1- from steering rack -2-.



- Remove bolt -2- and detach intermediate steering shaft -3- from steering column -1-.
- Remove noise insulation (rear) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .





- Carefully fold back floor covering.
- Remove nuts -arrows-.
- Pull sealing boot off body.
- Remove intermediate steering shaft towards passenger compartment.

#### Installing

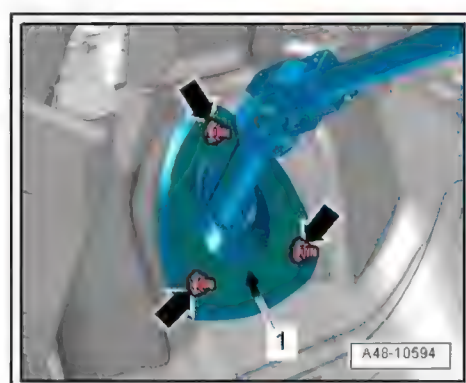
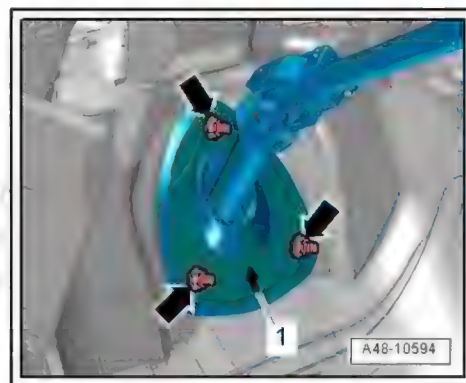
Installation is carried out in reverse sequence. Note the following:



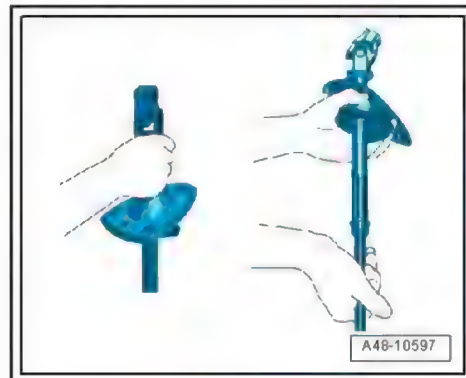
#### Note

*Always clean threaded hole for bolt at universal joint (using a thread tap or similar).*

- Before installing intermediate steering shaft, check that rubber grommet on sealing boot is properly fitted.
- When installed, arrow -1- must point upwards.



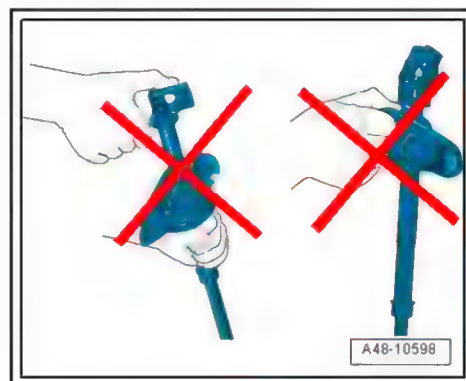
- Working from passenger compartment, bring intermediate steering shaft into installation position.
- When transporting the steering shaft, hold it by the upper steel shaft above the sealing boot as shown in the illustration.
- When fitting, hold the steering shaft with one hand on the sealing shell below the sealing boot and with the other hand on the lower steel shaft as shown in the illustration.



#### NOTICE

Risk of damage to steering shaft and sealing boot.

- ◆ The steering shaft must not be carried by holding the sealing boot.
- ◆ The sealing boot must not be pulled off the steering shaft.
- ◆ The joints must not be deflected further than the stop.





- Then push intermediate steering shaft -1- onto steering rack -2- as far as stop and tighten bolt -arrow-.

#### NOTICE

With bolt ➔ [Item 1 \(page 384\)](#) screwed in by hand, try to pull off intermediate steering shaft to check that it is correctly seated. Then tighten bolt ➔ [Item 1 \(page 384\)](#) .

The remaining installation steps are carried out in the reverse sequence.

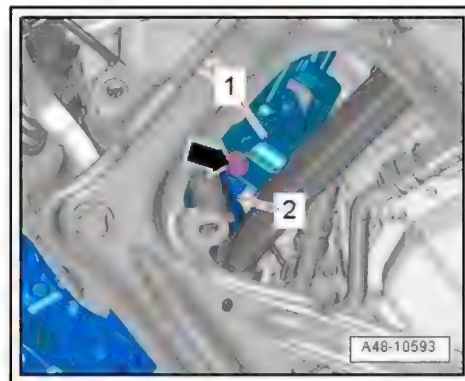
Tightening torques

- ♦ ➔ ["2.1 Exploded view - steering column", page 381](#)

## 2.7 Removing and installing control unit for electronic steering column lock - J764-

Special tools and workshop equipment required

- ♦ Torque wrench - V.A.G 1783-



- ♦ Vehicle diagnostic tester



## Removing

### ! NOTICE

Before removing the steering column, please note the following points:

Draw a sketch showing

- ◆ the layout of the electrical wiring harnesses
- ◆ the attachment of the electrical wiring harnesses
- ◆ the fitting locations of the cable ties.

This applies particularly to the wiring harness for the control unit for electronic steering column lock - J764- .

Before installing the steering column, please note the following points:

- Restore the layout of the electrical wiring harnesses exactly as it was prior to removal.
- Restore the attachments of the electrical wiring harnesses exactly as they were prior to removal.
- All cable ties unfastened or cut open when removing the steering column must be re-attached in the same position when refitting it.
- When adjusting the steering column, check that the wiring harness leading to the control unit for electronic steering column lock - J764- is not trapped and does not come into contact with any sharp edges.
- When renewing control unit, select "Replace" function for relevant control unit using ⇒ Vehicle diagnostic tester in Guided Functions mode.
- Remove steering column ⇒ [page 387](#) .
- Remove bolt -1- and detach control unit for electronic steering column lock - J764- -2-.

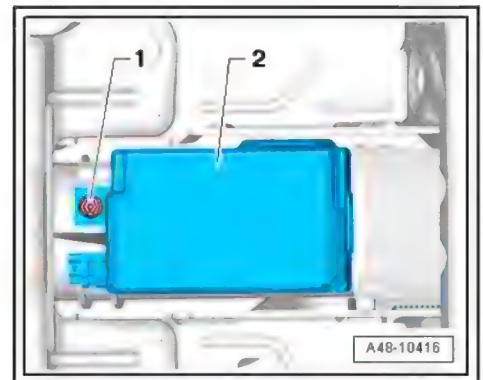
### ! NOTICE

After removing the control unit, make sure no dirt or foreign bodies get into the steering column.

## Installing

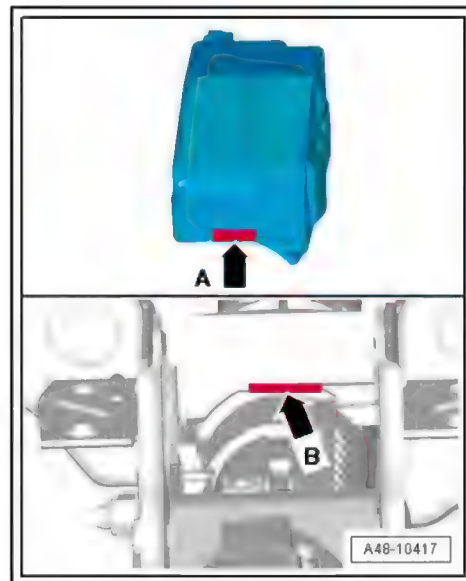
Installation is carried out in reverse sequence. Note the following:

- ◆ If only the control unit for electronic steering column lock - J764- has been renewed, the original bolt for securing the control unit can be re-used.
- ◆ If the steering column has been renewed, remove the protective cover and use the bolt fitted in the new steering column to secure control unit for electronic steering column lock - J764- .





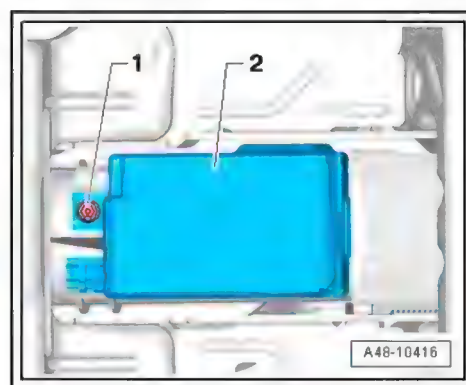
- To install control unit for electronic steering column lock - J764- , insert lug -arrow A- into groove -arrow B- on steering column and press control unit for electronic steering column lock - J764- firmly onto steering column by hand.



- When entire surface of control unit for electronic steering column lock - J764- -2- makes flush contact with steering column, fit bolt -1- and tighten.
- Install steering column ➔ [page 387](#) .
- If the warning lamp for the steering angle sender - G85- lights up in the instrument cluster, rectify the fault and perform the basic setting for the dynamic steering if necessary ➔ [page 355](#) .

Tightening torques

- ◆ ➔ ["2.1 Exploded view - steering column", page 381](#)



## 2.8 Removing and installing control unit for electrically adjustable steering column - J866-

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1410-



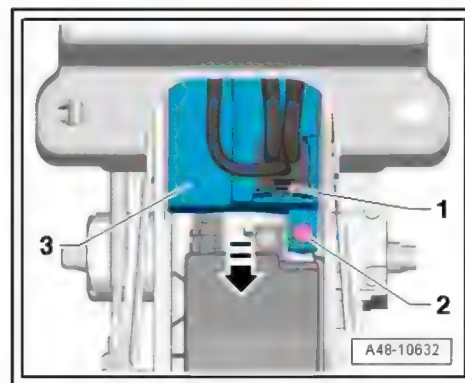
- ◆ Vehicle diagnostic tester





## Removing

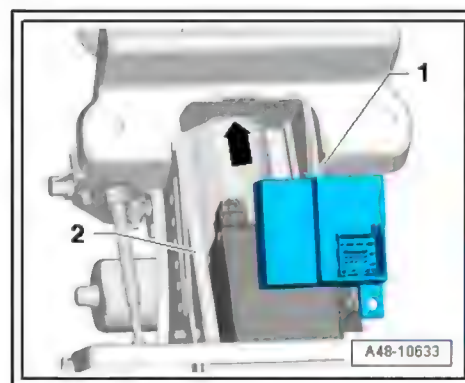
- When renewing control unit, select “Replace” function for relevant control unit using ⇒ Vehicle diagnostic tester in Guided Functions mode.
- Remove steering column ⇒ [page 387](#) .
- Unplug connector -1-.
- Remove bolt -2-.
- Slightly lift control unit for electrically adjustable steering column - J866- -3- and remove from steering column in direction of -arrow-.



## Installing

Installation is carried out in reverse sequence. Note the following:

- To install control unit for electrically adjustable steering column - J866- , insert lug -1- into groove -arrow- on steering column -2-.
- Basic setting of steering column must be performed if control unit for electrically adjustable steering column - J866- has been renewed.
- Connect vehicle diagnostic tester and start Guided Functions for the vehicle in question.
- Select the relevant program in Guided Functions, “09 - Electronic central electrics”.
- Follow the instructions on the screen.



## Tightening torques

- ◆ ⇒ [“2.1 Exploded view - steering column”, page 381](#)



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### 3 Steering rack

⇒ "3.1 Exploded view - steering rack", page 402

⇒ "3.2 Removing and installing steering rack", page 407

⇒ "3.3 Removing and installing boot", page 411

⇒ "3.4 Removing and installing track rod", page 416

⇒ "3.5 Removing and installing track rod ball joint", page 421

#### 3.1 Exploded view - steering rack

⇒ "3.1.1 Exploded view - steering rack with track rods", page 402

⇒ "3.1.2 Exploded view - steering rack", page 403

##### 3.1.1 Exploded view - steering rack with track rods

###### 1 - Electromechanical steering rack with track rods

- ☐ With power steering control unit - J500-
- ☐ Removing and installing ⇒ [page 407](#)
- ☐ Servicing ⇒ [page 403](#)
- ☐ Different versions available ⇒ Electronic parts catalogue

A removable heat insulation mat was fitted on the steering rack at the start of production. This heat insulation mat must also be fitted when re-installing the old steering rack.

During the course of production, this heat insulation mat was replaced by a new mat which is permanently bonded onto the steering rack. With this type of steering rack, it is not necessary to transfer the removable mat from the old steering rack to the new one.

Replacement steering racks are always supplied with a permanently bonded heat insulation mat.

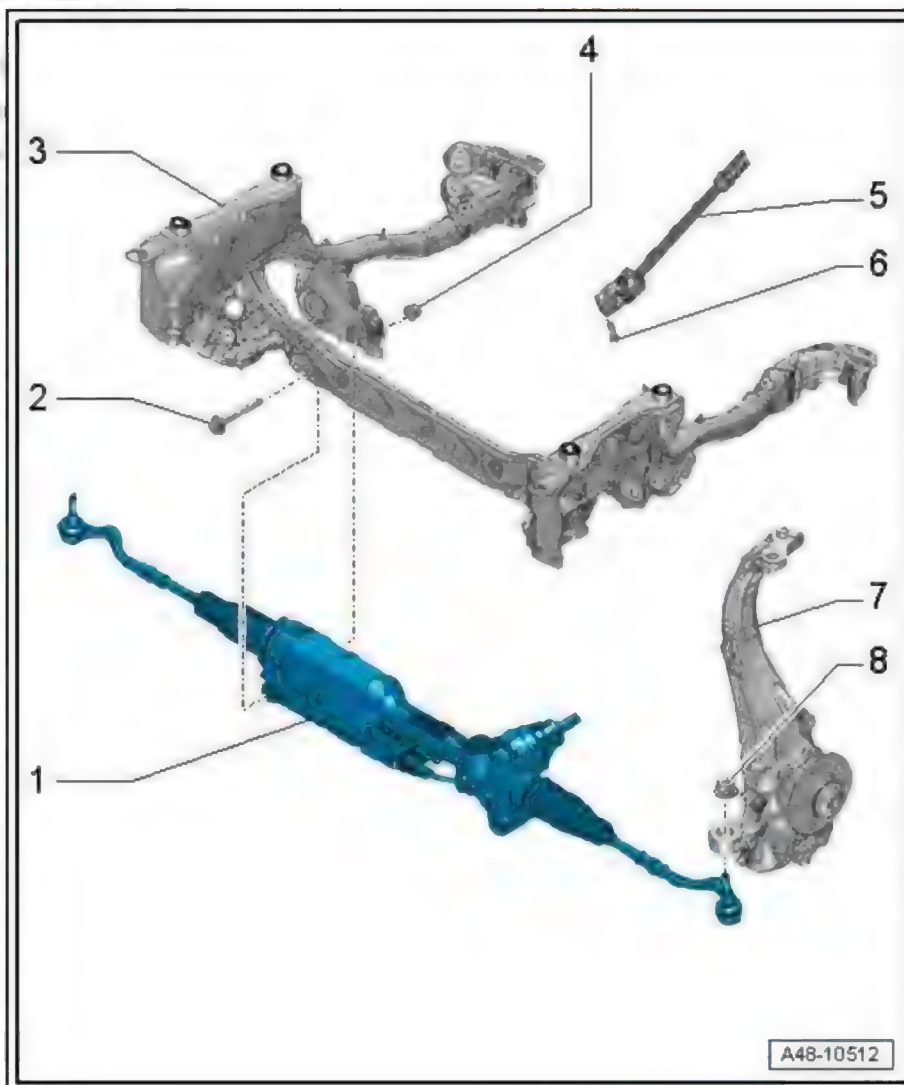
###### 2 - Bolt

- ☐ 80 Nm +180°
- ☐ Always renew if removed

###### 3 - Subframe

###### 4 - Nut

- ☐ Inserted into subframe
- ☐ Always renew if removed



A48-10512





5 - Intermediate steering shaft

6 - Bolt

- ☐ Tightening torque ⇒ [Item 1 \(page 382\)](#)

7 - Wheel bearing housing

8 - Nut

- ☐ 100 Nm
- ☐ Always renew if removed

### 3.1.2 Exploded view - steering rack

This overview is applicable to LHD and RHD vehicles (layout is similar).



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## Note

- ◆ **Renew self-locking nuts and bolts.**
- ◆ **Welding and straightening work on steering components is not permitted.**
- ◆ **Use only power steering rack grease to grease rack (pinion side) and ball races (motor side). Important: different types of grease are required for the left and right sides; for correct type refer to ⇒ Electronic parts catalogue .**
- ◆ **Hose clips -1 and 8- are tightened with different tightening torques.**

### 1 - Hose clip

- ☐ Always renew if removed
- ☐ Use clamp tensioner to tighten hose clip  
⇒ [page 406](#)



## Note

*The new hose clip should not be opened.*

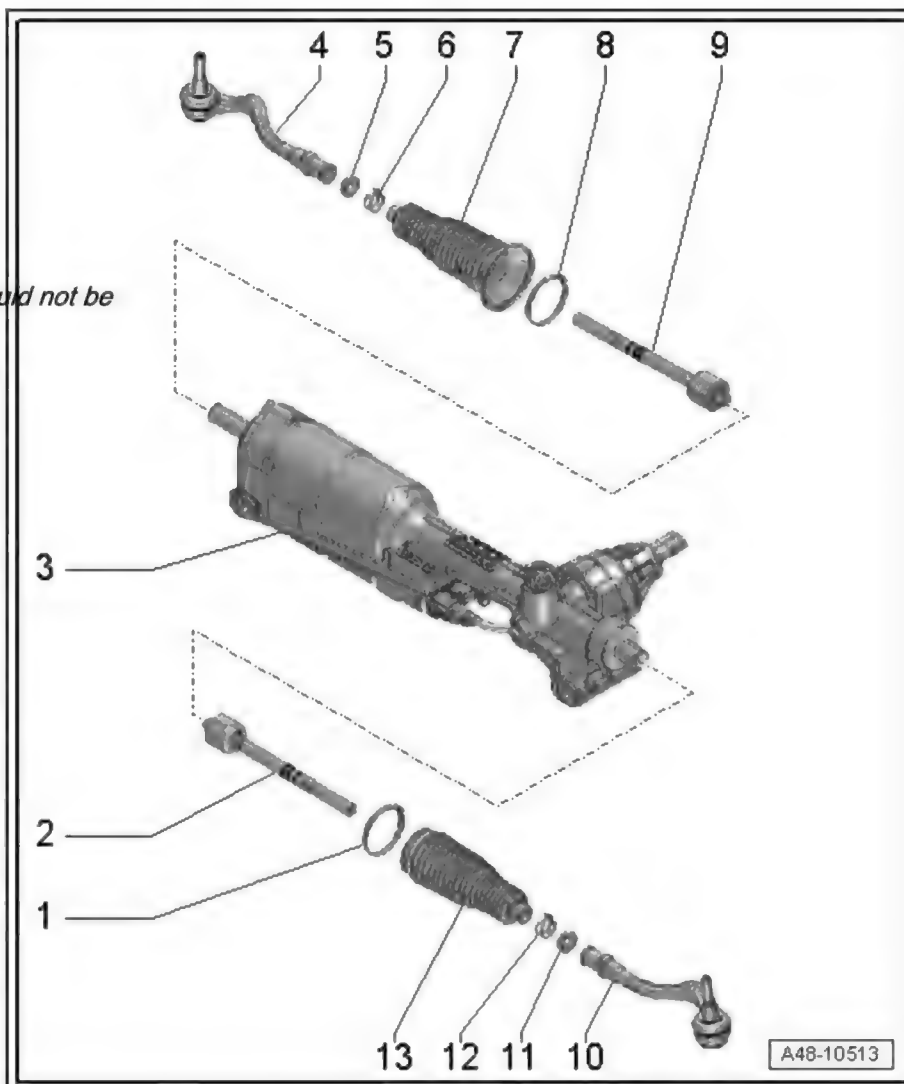
- ☐ For correct version refer to ⇒ Electronic parts catalogue

### 2 - Track rod

- ☐ 100 Nm
- ☐ Removing and installing  
⇒ [page 416](#)
- ☐ Grease joint with power steering rack grease
- ☐ If track rod is bent and needs to be renewed, track control link on this side of vehicle is also damaged and must be renewed

### 3 - Electromechanical steering rack

- ☐ Removing and installing  
⇒ [page 407](#)
- ☐ Grease rack with power steering rack grease . Important: different types of grease are required for the left and right sides; for correct type refer to ⇒ Electronic parts catalogue .
- ☐ Different versions available ⇒ Electronic parts catalogue



A removable heat insulation mat was fitted on the steering rack at the start of production. This heat insulation mat must also be fitted when re-installing the old steering rack.

During the course of production, this heat insulation mat was replaced by a new mat which is permanently bonded onto the steering rack. With this type of steering rack, it is not necessary to transfer the removable mat from the old steering rack to the new one.

Replacement steering racks are always supplied with a permanently bonded heat insulation mat.





#### 4 - Track rod ball joint

- ☐ Removing and installing ⇒ [page 421](#)
- ☐ Check that dust caps are seated correctly and not damaged.
- ☐ Specified dimension ⇒ [page 406](#)
- ☐ If track rod ball joint is bent and needs to be renewed, track control link on this side of vehicle is also damaged and must be renewed

#### 5 - Nut

- ☐ 80 Nm
- ☐ Counterhold track rod ball joint when loosening and tightening

#### 6 - Spring-type clip

- ☐ Always renew if removed
- ☐ Installing spring-type clip ⇒ [page 407](#)

#### 7 - Boot

- ☐ Check for damage
- ☐ Always renew if removed
- ☐ Before installation, grease evenly all round inside of boot seating surfaces with power steering rack grease ⇒ ETKA - Electronic parts catalogue .
- ☐ Before installation, check boot seating surface on steering rack housing for damage. If sealing surface on steering rack housing is damaged, steering rack must be renewed.
- ☐ Must not be twisted when adjusting toe setting
- ☐ Must be installed correctly ⇒ [page 407](#)
- ☐ Renewing ⇒ [page 411](#)

#### 8 - Hose clip

- ☐ Always renew if removed
- ☐ Use clamp tensioner to tighten hose clip ⇒ [page 406](#)



#### Note

*The new hose clip should not be opened.*

- ☐ For correct version refer to ⇒ Electronic parts catalogue

#### 9 - Track rod

- ☐ 100 Nm
- ☐ Removing and installing ⇒ [page 416](#)
- ☐ Grease joint with power steering rack grease
- ☐ If track rod is bent and needs to be renewed, track control link on this side of vehicle is also damaged and must be renewed

#### 10 - Track rod ball joint

- ☐ Removing and installing ⇒ [page 421](#)
- ☐ Check that dust caps are seated correctly and not damaged
- ☐ Specified dimension ⇒ [page 406](#)
- ☐ If track rod ball joint is bent and needs to be renewed, track control link on this side of vehicle is also damaged and must be renewed

#### 11 - Nut

- ☐ 80 Nm
- ☐ Counterhold track rod ball joint when loosening and tightening

#### 12 - Spring-type clip

- ☐ Always renew if removed
- ☐ Installing spring-type clip ⇒ [page 407](#)



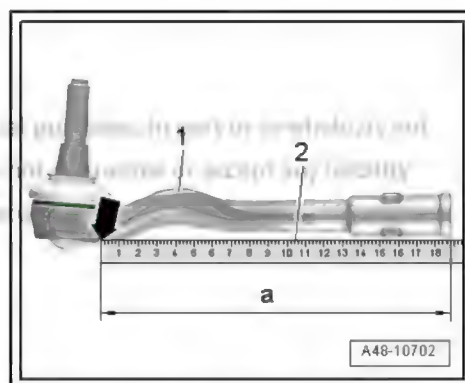


### 13 - Boot

- ☐ Check for damage
- ☐ Always renew if removed
- ☐ Before installation, grease evenly all round inside of boot seating surfaces with power steering rack grease ⇒ ETKA - Electronic parts catalogue .
- ☐ Before installation, check boot seating surface on steering rack housing for damage. If sealing surface on steering rack housing is damaged, steering rack must be renewed.
- ☐ Must not be twisted when adjusting toe setting
- ☐ Must be installed correctly ⇒ [page 407](#)
- ☐ Renewing ⇒ [page 411](#)

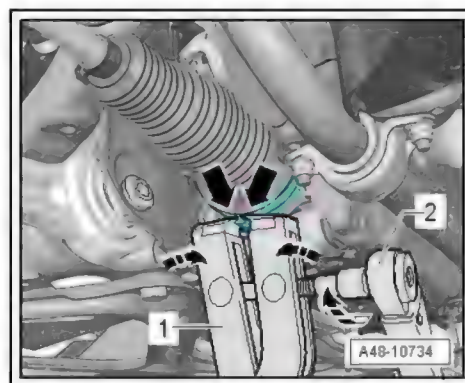
#### Specified dimension for track rod ball joint

- Apply steel ruler -2- to track rod ball joint -1- and slide as far as rolled edge -arrow- on end of track rod ball joint.
- The entire steering rack with track rod, track rod ball joint and track rod control link (on the corresponding side) must be renewed if dimension -a- is less than 188 mm.



#### Tightening hose clip (inner)

- Apply clamp tensioner -1-, as shown in illustration. Ensure jaws of tool make contact with lugs -arrows- on hose clip.
- Tighten clip by turning spindle with torque wrench -2- (take care to keep tool straight).
- ◆ Use torque wrench -2- with adjustment range 5 ... 50 Nm (e.g. -V.A.G 1331- ).
- ◆ Make sure thread of spindle on tool -1- turns freely. Lubricate with MoS<sub>2</sub> grease if necessary.
- ◆ If the thread is stiff (e.g. due to dirt), the required clamping force will not be attained at the hose clip when the specified tightening torque is applied.

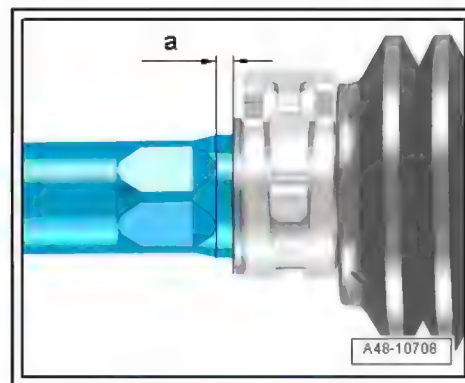


Type of hose clip	Clamp tensioner - V.A.G 1682 A- with adapter -V.A.G 1682 A/1- (Hazet)	Clamp tensioner - V.A.G 1682- with adapter -V.A.G 1682 A/1- (Ötiker)
Hose clip Ø 85 mm (passenger side) ⇒ <a href="#">Item 8 (page 405)</a>	7 Nm	9 Nm
Hose clip Ø 59 mm (driver side) ⇒ <a href="#">Item 1 (page 404)</a>	10 Nm	12 Nm



Installing rubber boot (outer):

- Dimension -a- = 2 mm



### 3.2 Removing and installing steering rack



Note

*The power steering rack is removed and installed complete with track rods.*

A removable heat insulation mat was fitted on the steering rack at the start of production. This heat insulation mat must also be fitted when re-installing the old steering rack.

During the course of production, this heat insulation mat was replaced by a new mat which is permanently bonded onto the steering rack. With this type of steering rack, it is not necessary to transfer the removable mat from the old steering rack to the new one.

Replacement steering racks are always supplied with a permanently bonded heat insulation mat.

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-

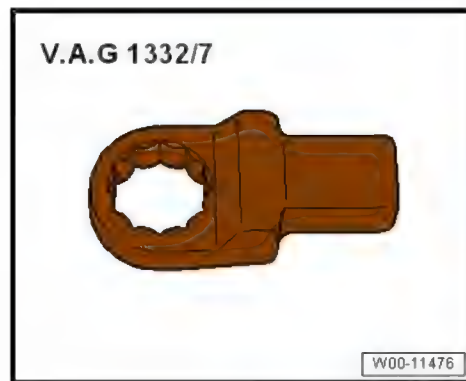


- ◆ Torque wrench - V.A.G 1332-

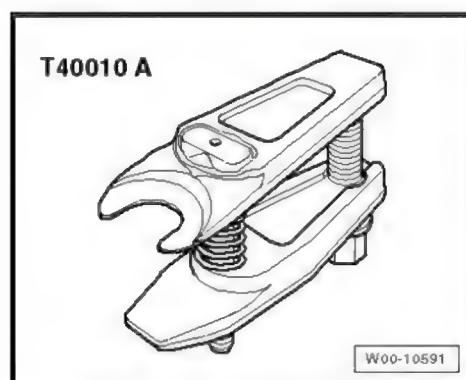




◆ Ring spanner insert - V.A.G 1332/7-



◆ Ball joint puller - T40010 A-



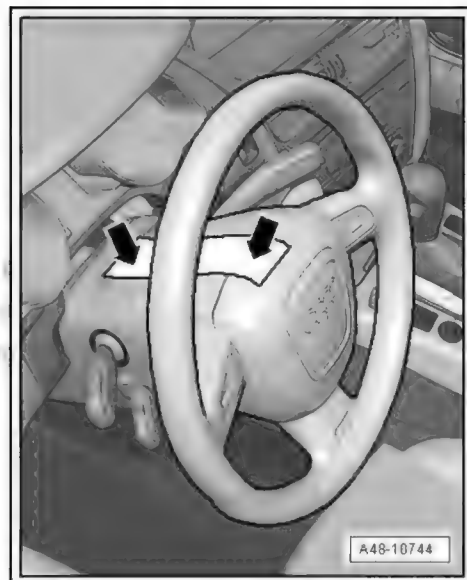
Removing

- Turn wheels to straight ahead position.
- Switch off ignition and remove ignition key.
- To prevent unintentional turning, secure steering wheel in straight-ahead position with adhesive tape -arrow-.



Note

- ◆ *Use adhesive tape that can be completely removed afterwards without leaving marks.*
- ◆ *Do not turn steering wheel while performing repair work, as otherwise airbag coil connector and return ring with slip ring - F138- could be damaged.*
- Remove front wheels ➔ [page 329](#) .



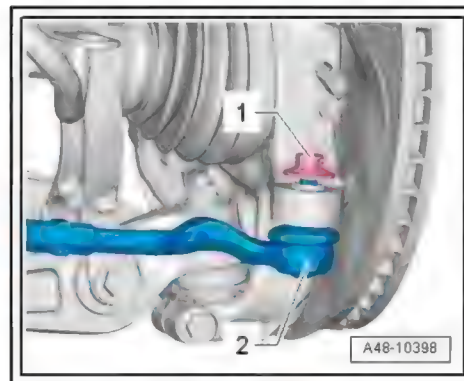


- Unscrew nut -1- on joint pin -2- of track rod ball joint until it is flush with end of thread. Counterhold if necessary when loosening.



Note

*Leave nut screwed on a few turns to protect threads on joint pin.*

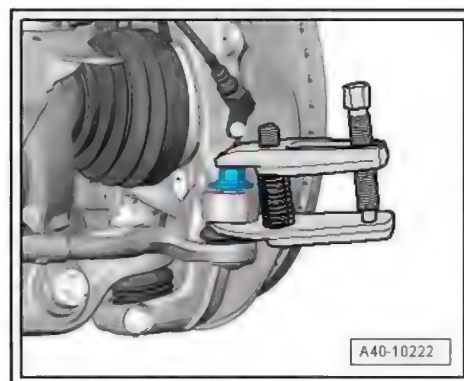


- Press track rod ball joint off wheel bearing housing using ball joint puller - T40010 A- . Then remove nut.

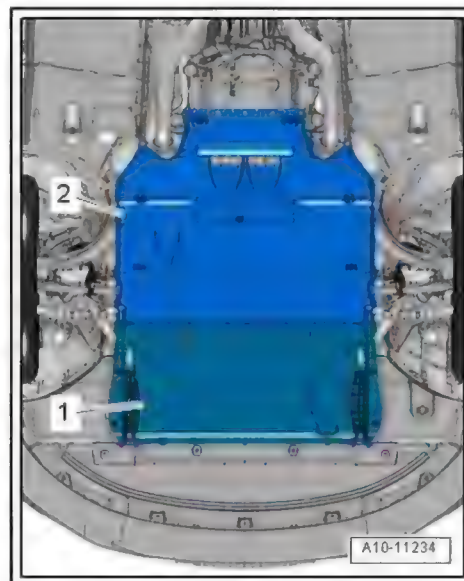


Note

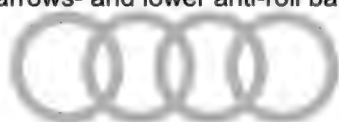
*Make sure the two lever arms of the puller are parallel when maximum force is exerted; adjust as necessary.*



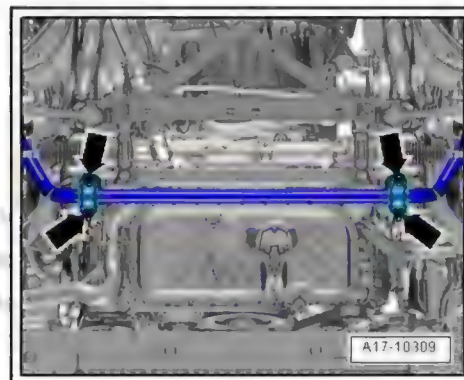
- Remove noise insulation panels -1 and 2- ➔ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .



- Unscrew nuts -arrows- and lower anti-roll bar.

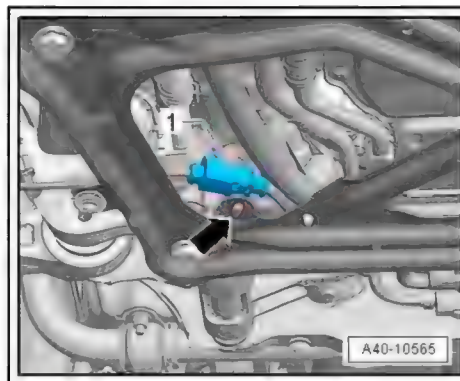


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- Release clip -arrow-, unplug electrical connector -1- and move electrical wiring clear.

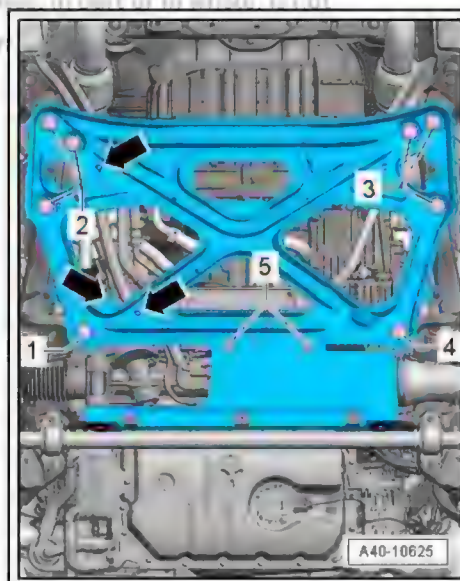


- Release remaining clips -arrows- on cross brace and move wiring harness clear.
- Remove cross brace ➔ [page 51](#) .

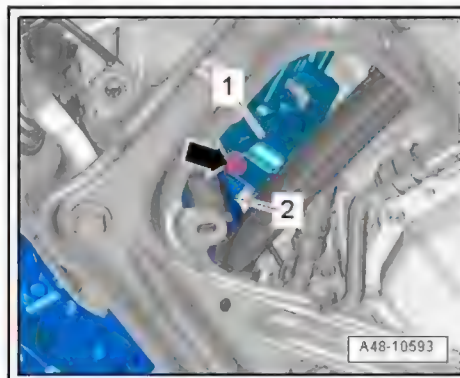
**NOTICE**

Risk of damage to running gear components.

- ◆ Never place the vehicle on its wheels if the subframe mounting, steering rack or subframe cross brace is not correctly installed!
- ◆ The vehicle must not be supported on the subframe or the subframe cross brace (e.g. using a trolley jack or similar)!



- Remove bolt -arrow-.
- Pull intermediate steering shaft -1- off steering rack -2- and secure intermediate steering shaft to prevent it from slipping out.

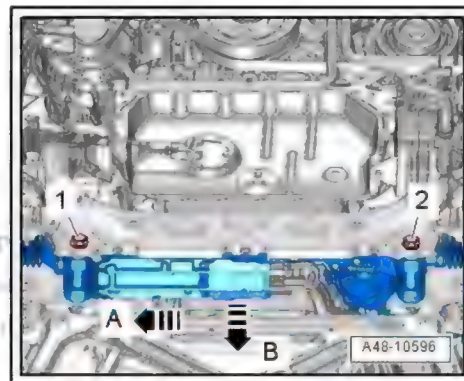


- Release retainer, press catch downwards and unplug electrical connector -1- for signal wires (CAN bus and terminal 15) at power steering control unit - J500- .
- Unplug electrical connector -2- for voltage supply (terminal 30) at power steering control unit - J500- (release retainer -arrow- and push catch downwards).





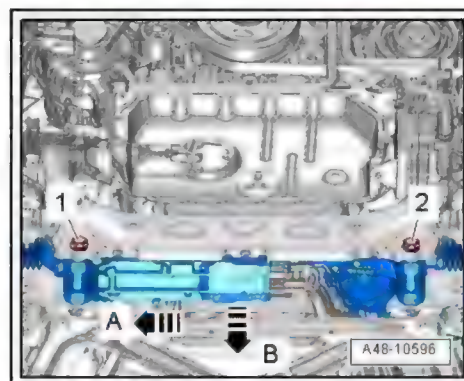
- Remove bolts -1, 2- and remove guard plate, if fitted.
- Push steering rack slightly to the side-arrow A- and take out from below -arrow B-.



### Installing

Installation is carried out in reverse sequence. Note the following:

- Screw in bolts -1 and 2- loosely at first, then tighten.



### ! NOTICE

With bolt ➔ [Item 1 \(page 384\)](#) screwed in by hand, try to pull off intermediate steering shaft to check that it is correctly seated. Then tighten bolt ➔ [Item 1 \(page 384\)](#) .

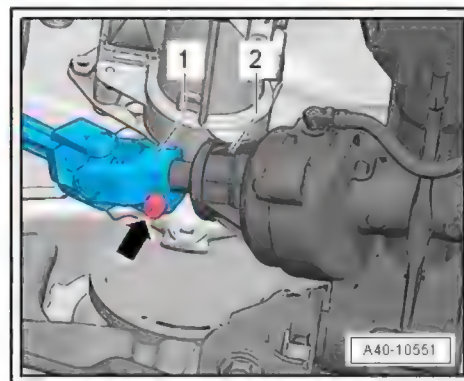
- Install anti-roll bar ➔ [page 53](#) .
- Install cross brace ➔ [page 51](#) .

If a new electromechanical steering rack has been installed, start the program **J 500 Replace control unit** in the ➔ Vehicle diagnostic tester using the **Guided Fault Finding** function.

- Check and adjust wheel alignment ➔ [page 330](#) .

### Tightening torques

- ◆ ➔ ["3.1.1 Exploded view - steering rack with track rods", page 402](#)



## 3.3 Removing and installing boot

Special tools and workshop equipment required





◆ Torque wrench - V.A.G 1331-



◆ Torque wrench - V.A.G 1332-



◆ Ring spanner insert - V.A.G 1332/7-



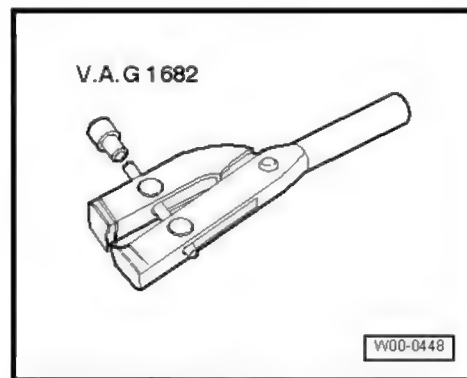
◆ Hose clip pliers - V.A.G 1921-



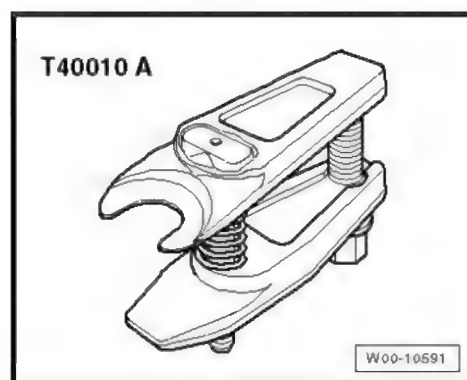




- ◆ Clamp tensioner - V.A.G 1682 A- with adapter -V.A.G 1682 A/ 1-



- ◆ Ball joint puller - T40010 A-



## Removing

Boot must always be renewed following removal.

### ⚠ CAUTION

If boot is damaged, moisture and dirt can enter steering rack and cause irreparable damage.

- ◆ A film of lubricant should be visible on and around the teeth of the steering rack. Renew steering rack if no film of lubricant is present.
- ◆ When cleaning the steering rack and surrounding components, removing steering rack components and lubricating the steering rack, ensure that no dirt enters the steering rack through the defective rubber boot.

- Remove front wheel ➔ [page 329](#) .
- Turn wheels to straight ahead position.
- Remove noise insulation ➔ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Clean power steering rack and subframe in vicinity of rubber boot.

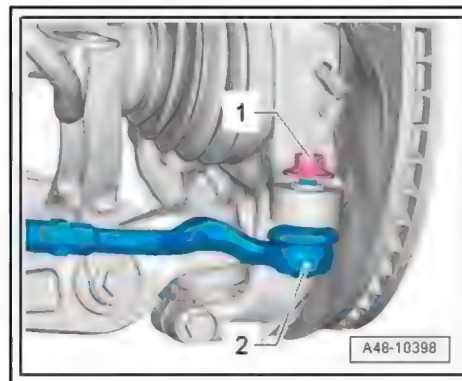
### ⓘ NOTICE

No dirt must be allowed to enter the steering rack through a defective rubber boot during this operation.



- Unscrew nut -1- on joint pin -2- of track rod ball joint until it is flush with end of thread. Counterhold if necessary when loosening.

Leave nut screwed on a few turns to protect threads on joint pin.

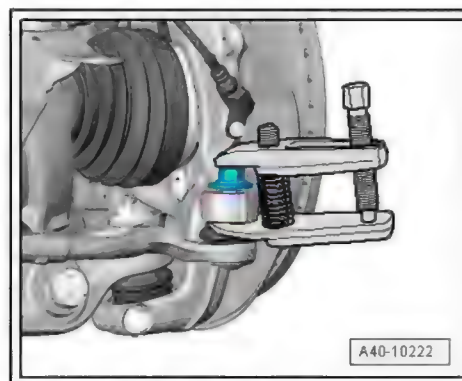


- Press track rod ball joint off wheel bearing housing using ball joint puller - T40010 A- . Then remove nut.

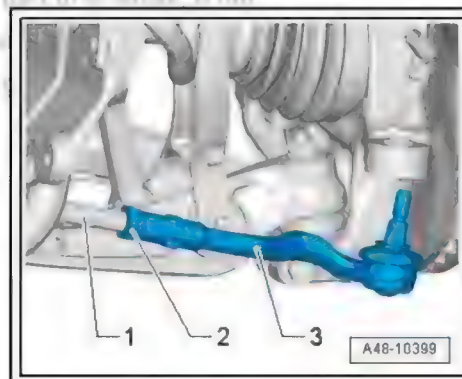


#### Note

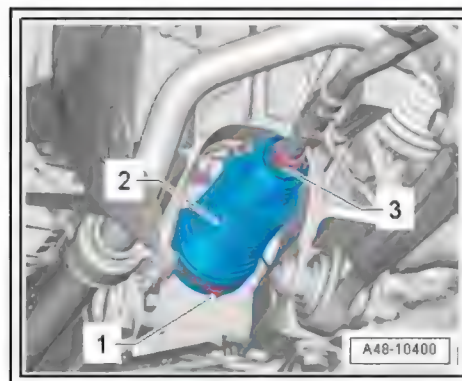
*Make sure the two lever arms of the puller are parallel when maximum force is exerted; adjust as necessary.*



- Mark position of nut -2- on track rod -1- for refitting.
- Loosen nut -2- (counterhold track rod ball joint -3-).



- Release spring-type clip -3- using hose clip pliers - V.A.G 1921- and detach.
- Detach hose clip -1- and pull boot -2- outwards off power steering rack.





- Unscrew track rod ball joint -3- and nut -2- from track rod -1-.
- Detach rubber boot with spring-type clip from track rod.

**i** Note

- ◆ *Renew the complete steering rack unit if there are signs of corrosion, damage, wear or dirt on the rack.*
- ◆ *The complete steering rack unit must also be renewed if there is no visible lubricating film on the rack.*

Installing

Installation is carried out in reverse sequence. Note the following:

Boot must always be renewed following removal.

Before installation, grease evenly all round inside of boot seating surface with power steering rack grease ⇒ ETKA - Electronic parts catalogue .

Before installation, check boot seating surface on steering rack housing for damage. If sealing surface on steering rack housing is damaged, steering rack must be renewed.

The rack must be lubricated with grease supplied in the repair kit before installing.

**!** NOTICE

Do NOT use any other type of grease.

For this procedure turn steering to full lock in both directions.

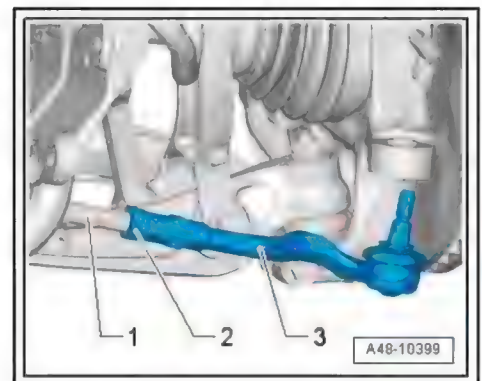
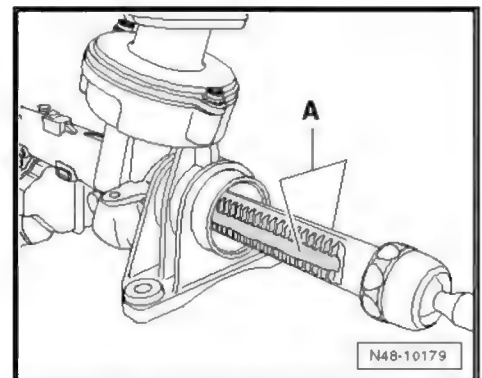
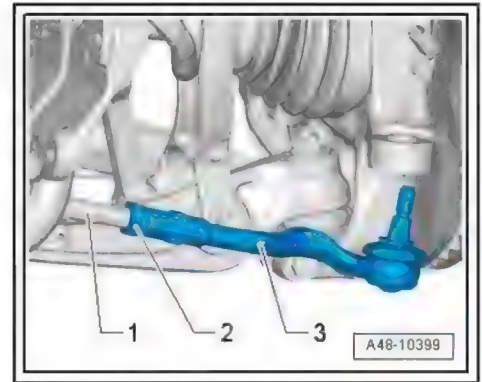
A removed steering rack is shown for ease of illustration.

- Grease the rack on the side with the teeth -A- and on the side that contacts the thrust pieces.

**i** Note

*Use only power steering rack grease for greasing rack. Important: different types of grease are required for the left and right sides; for correct type refer to ⇒ Electronic parts catalogue .*

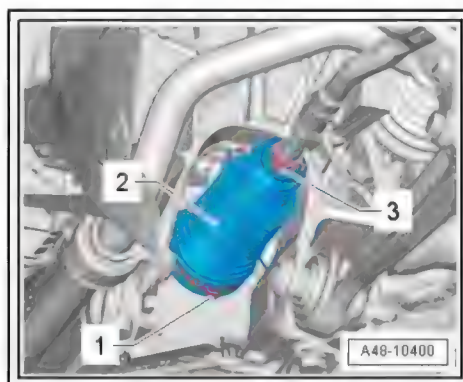
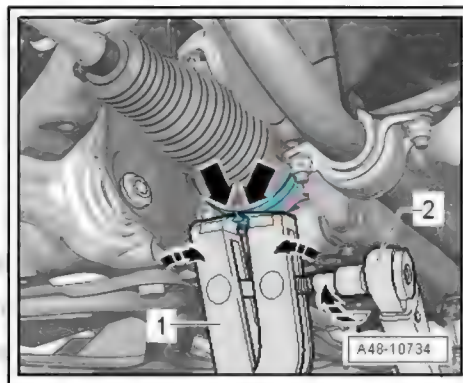
- Turn wheels to straight ahead position.
- Fit new hose clips and rubber boot onto track rod.
- Screw in nut -1- and track rod ball joint -3- as far as marking made when removing.
- Tighten nut -2- to specified torque. Counterhold at track rod ball joint -3-. Fit rubber boot with new hose clip onto steering rack housing.
- Make sure that boot is correctly seated on power steering rack.
- Boot must engage in groove and make contact with contour of power steering rack.





#### Installing hose clip (inner)

- Apply clamp tensioner as shown. Ensure jaws of tool make contact with lugs -arrows- on hose clip ➔ [page 406](#) .
- Tighten hose clip by turning spindle with torque wrench (take care to keep clamp tensioner straight).
- ◆ Tightening torque ➔ [page 406](#)
- ◆ Use torque wrench with 5...50 Nm adjustment range (e.g. V.A.G 1331- ).
- ◆ Make sure thread of spindle on tool -1- turns freely. Lubricate with MoS<sub>2</sub> grease if necessary.
- ◆ If the thread is stiff (e.g. due to dirt), the required clamping force will not be attained at the hose clip when the specified tightening torque is applied.
- Secure spring-type clip -3- on boot -2- with hose clip pliers - V.A.G 1921- .



#### Installing rubber boot (outer):

- Dimension -a- = 2 mm

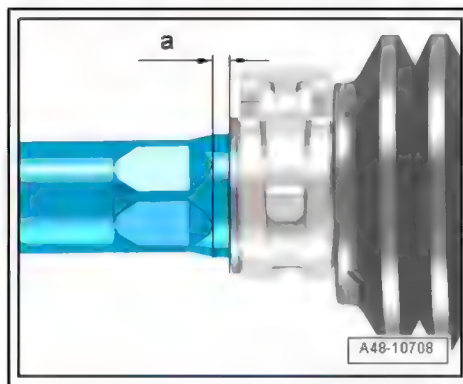
The remaining installation steps are carried out in the reverse sequence.

- Check and adjust wheel alignment as required, see chart ➔ [page 344](#) .

Wheel alignment must always be checked and adjusted if necessary using VW/Audi-approved equipment.

#### Tightening torques

- ◆ ➔ [“3.1.2 Exploded view - steering rack”, page 403](#)
- ◆ ➔ [“3.1.1 Exploded view - steering rack with track rods”, page 402](#)



### 3.4 Removing and installing track rod

Special tools and workshop equipment required





◆ Torque wrench - V.A.G 1331-



◆ Torque wrench - V.A.G 1332-



◆ Ring spanner insert - V.A.G 1332/7-



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◆ Hose clip pliers - V.A.G 1921-





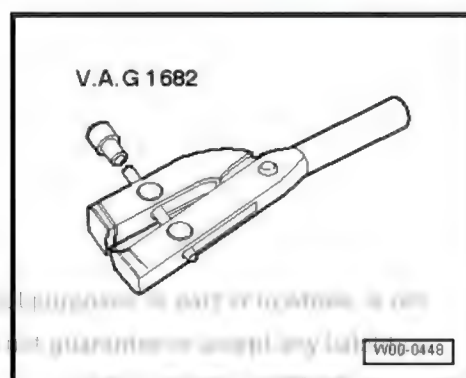
◆ Open-end spanner attachment - V.A.G 1923-



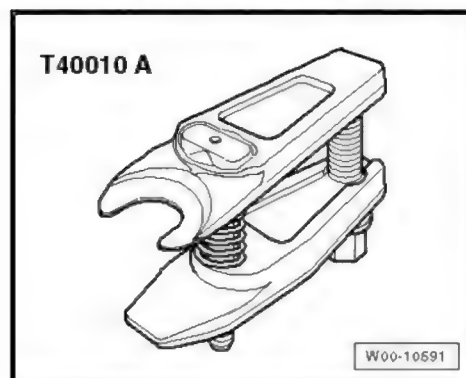
◆ Clamp tensioner - V.A.G 1682 A- with adapter -V.A.G 1682 A/1-



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◆ Ball joint puller - T40010 A-



### Removing

The track rods can be removed and installed with the steering rack in the vehicle.

- Remove front wheel ⇒ [page 329](#) .
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .

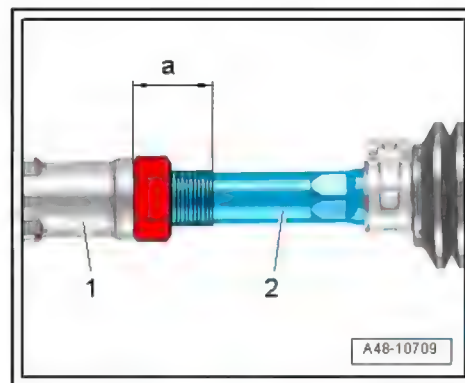




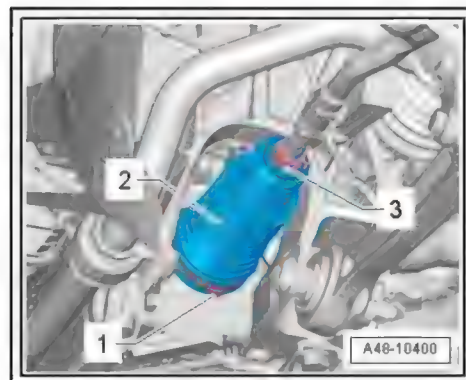
- Measure and note down dimension -a- between track rod ball joint -1- and track rod -2- on both sides. Dimension -a- should be the same on both sides after installation.
- If necessary, shorten the "longer" track rod ball joint (by screwing it further onto the track rod).
- Clean power steering rack and subframe in vicinity of rubber boot.



Take care to prevent dirt from entering the power steering rack and boot when renewing the track rod.

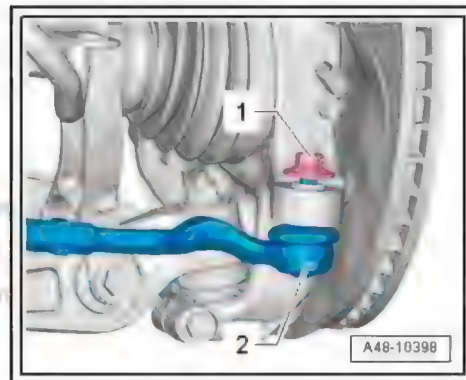


- Release spring-type clip -3- using hose clip pliers - V.A.G 1921- and detach.
- Detach hose clip -1- and pull boot -2- outwards off power steering rack.



- Unscrew nut -1- on joint pin -2- of track rod ball joint until it is flush with end of thread. Counterhold if necessary when loosening.

Leave nut screwed on a few turns to protect threads on joint pin.

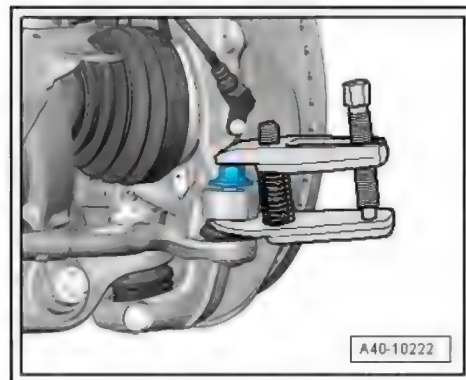


- Press track rod ball joint off wheel bearing housing using ball joint puller - T40010 A- . Then remove nut.



Note

*Make sure the two lever arms of the puller are parallel when maximum force is exerted; adjust as necessary.*







- Unscrew track rod. When doing so, counterhold piston rod of power steering rack using open-end spanner -1-.

2 - Open-end spanner attachment - V.A.G 1923-

#### Installing

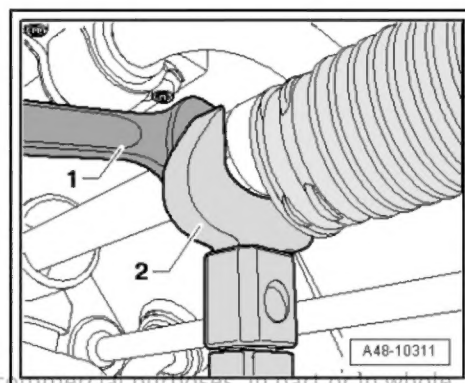
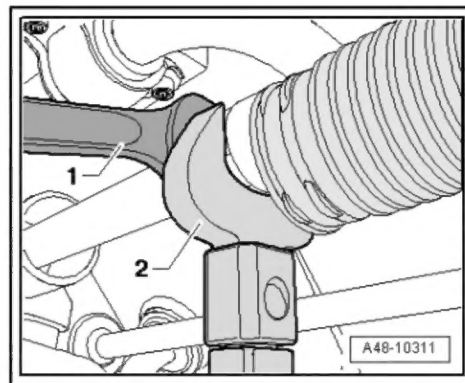
Installation is carried out in reverse sequence. Note the following:

Boot must always be renewed following removal.

Before installation, grease evenly all round inside of boot seating surfaces with steering rack grease ⇒ ETKA - Electronic parts catalogue .

Before installation, check boot seating surface on steering rack housing for damage. If sealing surface on steering rack housing is damaged, steering rack must be renewed.

- Attach track rod using open-end spanner attachment - V.A.G 1923- -2-. When doing so, counterhold piston rod of power steering rack using open-end spanner -1-.

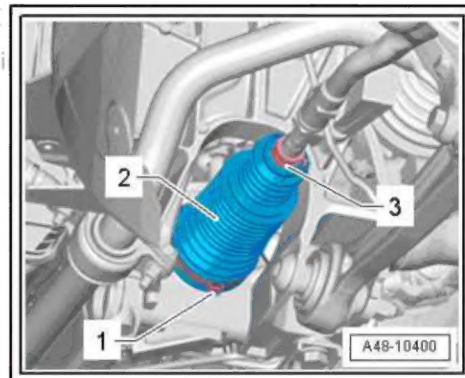


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- Renew spring-type clip -3- and O-type hose clip -1-.

Installing hose clip: with respect to the correctness of information i

- Fit new hose clip -1- and tighten ⇒ [page 406](#) .



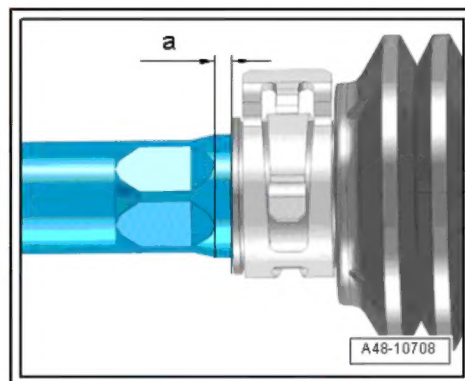
#### Installing rubber boot

- Dimension -a- = 2 mm
- Align track rod so that pin of track rod ball joint is in installation position.
- Insert track rod into wheel bearing housing as far as the stop.
- Fit front wheel ⇒ [page 329](#) .
- Check and adjust wheel alignment as required, see chart ⇒ [page 344](#) .

Wheel alignment must always be checked and adjusted if necessary using VW/Audi-approved equipment.

#### Tightening torques

- ♦ ⇒ [“3.1.1 Exploded view - steering rack with track rods”, page 402](#)
- ♦ ⇒ [“3.1.2 Exploded view - steering rack”, page 403](#)







### 3.5 Removing and installing track rod ball joint

Special tools and workshop equipment required

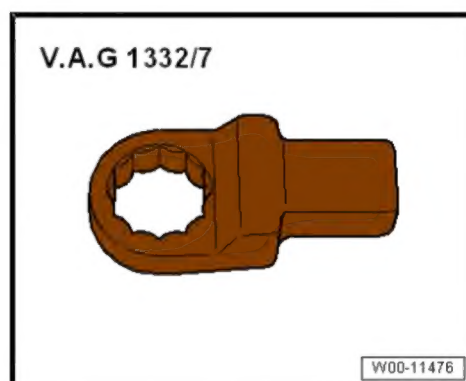
- ◆ Torque wrench - V.A.G 1331-



- ◆ Torque wrench - V.A.G 1332-



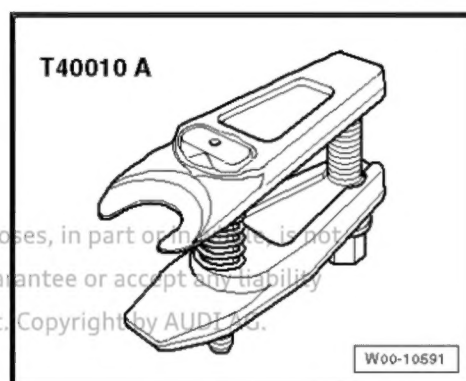
- ◆ Ring spanner insert - V.A.G 1332/7-



- ◆ Ball joint puller - T40010 A-



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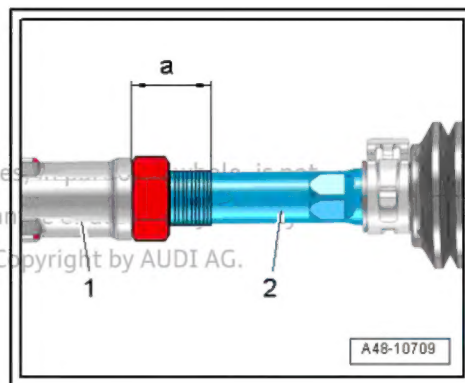






## Removing

- Remove front wheel ➤ [page 329](#) .
- Measure and note down dimension -a- between track rod ball joint -1- and track rod -2- on both sides. Dimension -a- should be the same on both sides after installation.
- If necessary, shorten the "longer" track rod ball joint (by screwing it further onto the track rod).

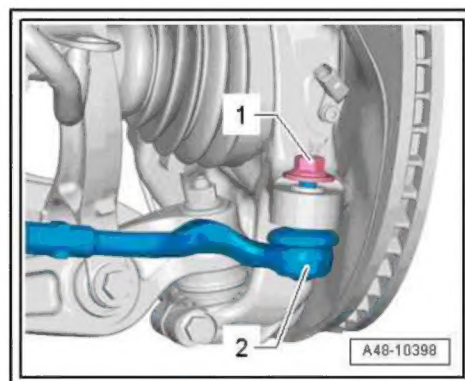


- Unscrew nut -1- on joint pin -2- of track rod ball joint until it is flush with end of thread. Counterhold if necessary when loosening.



### Note

Leave nut screwed on a few turns to protect threads on joint pin.

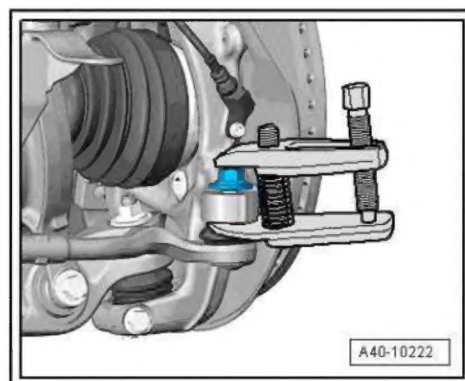


- Press track rod ball joint off wheel bearing housing using ball joint puller - T40010 A- . Then remove nut.



### Note

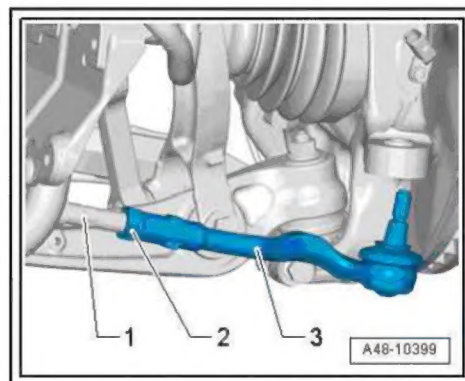
Make sure the two lever arms of the puller are parallel when maximum force is exerted; adjust as necessary.



- Just slacken nut -2- but do not remove. Counterhold at track rod ball joint -3-.
- Unscrew track rod ball joint -3-.

## Installing

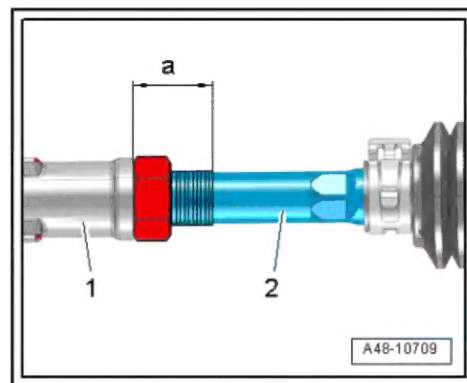
Installation is carried out in reverse sequence. Note the following:



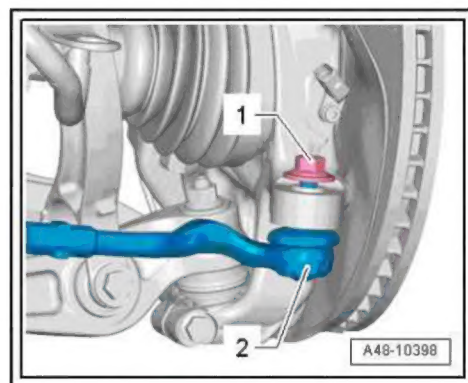




- Screw track rod ball joint -1- onto track rod -2- until dimension -a- measured on removal is obtained.
- Align track rod so that pin of track rod ball joint -1- is in installation position.
- Insert track rod ball joint into wheel bearing housing as far as the stop.



- Tighten nut -1-. Counterhold if necessary when tightening.

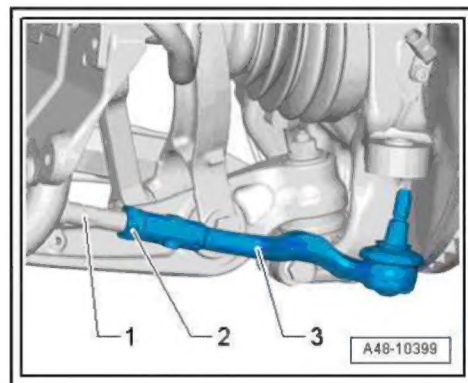


- Tighten nut -2-.
- Fit front wheel ➤ [page 329](#) .
- Check and adjust wheel alignment as required, see chart ➤ [page 344](#) .

Wheel alignment must always be checked and adjusted if necessary using VW/Audi-approved equipment.

#### Tightening torques

- ◆ ➤ ["3.1.1 Exploded view - steering rack with track rods", page 402](#)
- ◆ ➤ ["3.1.2 Exploded view - steering rack", page 403](#)



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